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EDITOR
WITMER STONE



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HUDSON, WILLIAM HENRY, Tower House, St. Luke's Road, Westbourne Park, London, W.....	1895
KRUKENBERG, Dr. E. F. W., Würzburg, Germany.....	1884
KRÜPER, Dr. THEOBALD J., University Museum, Athens, Greece.....	1884
LEGGE, Col. WILLIAM V., Cullenswood House, St. Mary's, Tasmania.....	1891
LE SOUËF, DUDLEY, Zoological Gardens, Melbourne, Australia.....	1911
MACFARLANE, RODERICK, Winnipeg, Manitoba.....	1886
MADARÁSZ, Dr. JULIUS VON, National Museum, Budapest, Hungary.....	1884
MATHEWS, GREGORY M., Langley Mount, Watford, Herts, England.....	1911
MENZBIER, Prof. Dr. MICHAEL, Imperial Society of Naturalists, Moscow, Russia.....	1884
MILLAIS, JOHN GUILLE, Compton's Brow, Horsham, England.....	1911
NAMIYE, M., Tokio, Japan.....	1886
NICHOLSON, FRANCIS, The Knoll, Windermere, Westmoreland, England.....	1884
NORTH, ALFRED J., Australian Museum, Sydney, New South Wales.....	1902
OGILVIE-GRANT, WILLIAM ROBERT, British Museum (Nat. Hist.), Cromwell Road, London, S. W.....	1899
PALMÉN, Dr. J. T., Helsingfors, Finland.....	1883
RAMSEY, E. P., Sydney, New South Wales.....	1884
RINGER, FREDERIC, Nagasaki, Japan.....	1888
SCLATER, WILLIAM LUTLEY, 10 Sloane Court, Chelsea, London, S. W.....	1906
SUSHKIN, Dr. PETER, University, Kharkov, Russia.....	1903
THEEL, Dr. HJALMAR, University of Upsala, Upsala, Sweden.....	1884
TSCHUSI ZU SCHMIDHOFFEN, VICTOR, RITTER VON, Villa Tännenhof, bei Hallein, Salzburg, Austria.....	1884
VAN OORT, EDWARD DANIEL, Museum Nat. Hist., Leyden, Holland.....	1913
WATERHOUSE, F. H., 3 Hanover Square, London, W.....	1889
WINGE, Dr. HERLUF, Univ. Zoological Museum, Copenhagen, Denmark.....	1903
WORCESTER, Prof. DEAN C., Manila, P.I.....	1903
ZELEDON, Don JOSÉ C., San José, Costa Rica.....	1884

MEMBERS.

- ALLEN, ARTHUR A., McGraw Hall, Cornell University, Ithaca, N. Y. (1909)1914
- ALLEN, FRANCIS H., 4 Park St., Boston, Mass. (1888)1901
- ALLEN, DR. GLOVER M., 234 Berkeley St., Boston, Mass. (1896)1904
- ANDERSON, DR. RUDOLPH M., 901 Virginia St., Sioux City, Ia. (1907)1914
- ATTWATER, H. P., 2120 Genesee St., Houston, Texas. (1891)1901
- BAGG, EGBERT, 406 Genesee St., Utica, N. Y. (1883)1914
- BAILEY, VERNON, 1834 Kalorama Ave., Washington, D. C. (1887)1901
- BAILEY, MRS. VERNON, 1834 Kalorama Ave., Washington, D. C. (1885)1901
- BAILY, WILLIAM L., Ardmore, Pa. (1886)1901
- BARBOUR, DR. THOMAS, Mus. Comp. Zoölogy, Cambridge, Mass. (1903)1914
- BARTSCH, PAUL, Smithsonian Inst., Washington, D. C. (1896)1902
- BERGTOLD, DR. W. H., 1159 Race St., Denver, Colo. (1889)1914
- BOND, FRANK, 3127 Newark St., Cleveland Park, Washington, D. C. (1887)1901
- BOWLES, JOHN HOOPER, Tacoma, Wash. (1891)1910
- BRAISLIN, DR. WILLIAM C., 556 Washington Ave., Brooklyn, N. Y. (1894)1902
- BROOKS, ALLAN, Okanagan Landing, B. C. (1902)1909
- BRYAN, WILLIAM ALANSON, College of Hawaii, Honolulu, Hawaiian Islands. (1898)1901
- BURNS, FRANK L., Berwyn, Pa. (1891)1901
- BUTLER, AMOS W., 52 Downey Ave., Irvington, Indianapolis, Ind. (1885)1901
- CAMERON, E. S., Marsh, Montana. (1903)1910
- CHAMBERS, W. LEE, Eagle Rock, Cal. (1907)1913
- CLARK, AUSTIN HOBART, 1726 18th St., N. W., Washington, D. C. (1899)1901
- CLARK, DR. HUBERT LYMAN, Museum of Comparative Zoölogy, Cambridge, Mass. (1886)1902
- DAGGETT, FRANK S., 2833 Menlo Ave., Los Angeles, Cal. (1889)1901
- DAWSON, WILLIAM LEON, Santa Barbara, Cal. (1895)1905
- DEANE, WALTER, 29 Brewster St., Cambridge, Mass. (1897)1901
- DEARBORN, NED, Linden, Md. (1902)1907
- EATON, ELON HOWARD, Hobart College, Geneva, N. Y. (1895)1907
- EVERMANN, PROF. BARTON W., 343 Sansome St., San Francisco, Cal. (1883)1901
- FINLEY, WILLIAM L., 651 East Madison St., Portland, Ore. (1904)1907
- FLEMING, JAMES H., 267 Rusholme Road, Toronto, Ontario. (1893)1901
- GAULT, BENJAMIN TRUE, Glen Ellyn, Ill. (1885)1903
- GOLDMAN, EDWARD ALFONSO, Biological Survey, Washington, D. C. (1897)1902
- HOFFMANN, RALPH, 11 W. Concord Ave., Kansas City, Mo. (1893)1901
- HOLLISTER, NED, U. S. Nat. Museum, Washington, D. C. (1894)1910
- HOWELL, ARTHUR H., 2919 S. Dakota Ave., Washington, D. C. (1889)1902
- JACOBS, J. WARREN, 404 S. Washington St., Waynesburg, Pa. (1889)1904

- JEFFRIES, WILLIAM AUGUSTUS, 11 Pemberton Square, Boston, Mass.
(1883)1901
- JOB, REV. HERBERT K., 291 Main St., West Haven, Conn. (1896)1901
- JORDAN, Prof. DAVID STARR, Stanford University, Cal. (1885)1901
- KENNARD, F. H., Dudley Road, Newton Centre, Mass. (1892)1912
- KNOWLTON, F. H., U. S. Nat. Mus., Washington, D. C. (1883)1902
- MACKAY, GEORGE H., 304 Bay State Road, Boston, Mass. (1890)1901
- MAILLIARD, JOHN W., 300 Front St., San Francisco, Cal. (1895)1901
- MILLER, MRS. OLIVE THORNE, 5928 Hays Ave., Los Angeles, Cal. (1887)1901
- MOORE, ROBERT THOMAS, King's Highway, Haddonfield, N. J. (1898)1914
- MORRIS, GEORGE SPENCER, Olney, Philadelphia, Pa. (1887)1903
- MORRIS, ROBERT O., 82 Temple St., Springfield, Mass. (1888)1904
- MURDOCH, JOHN, 16 High Rock Way, Allston, Mass. (1883)1901
- MURPHY, ROBERT C., Museum Brooklyn Institute, Eastern Parkway,
Brooklyn, N. Y. (1905)1914
- NICHOLS, JOHN TREADWELL, Am. Mus. Nat. Hist., New York City (1901)1914
- NORTON, ARTHUR H., Museum Natural History, 22 Elm St., Port-
land, Maine. (1890)1902
- PEARSON, T. GILBERT, 1974 Broadway, New York City (1891)1902
- PHILLIPS, JOHN C., Wenham, Mass. (1904)1912
- PREBLE, EDWARD A., 3027 Newark St., Washington, D. C. (1892)1901
- RATHBUN, SAMUEL F., 217 14th Ave., N., Seattle, Wash. (1893)1902
- RHOADS, SAMUEL N., 81 Haddon Ave., Haddonfield, N. J. (1885)1901
- RILEY, JOSEPH H., U. S. National Museum, Washington, D. C. (1897)1905
- RIVES, Dr. WILLIAM C., 1702 Rhode Island Ave., Washington, D. C.
(1885)1901
- ROBINSON, Col. WIRT, U. S. A., West Point, N. Y. (1897)1901
- SETON, ERNEST THOMPSON, Cos Cob, Conn. (1883)1901
- *SHERMAN, Miss ALTHEA R., National via McGregor, Iowa. (1907)1912
- STEPHENS, FRANK, 3746 Park Boulevard, San Diego, Cal. (1883)1901
- STRONG, Dr. REUBEN M., Univ. of Mississippi, University, Miss. (1889)1903
- SWALES, BRADSHAW HALL, Mus. of Zool., Ann Arbor, Mich. (1902)1909
- SWARTH, HARRY S., Mus. Hist. Sci. & Art, Los Angeles, Cal. (1900)1909
- TAVERNER, PERCY A., Victoria Memorial Museum, Ottawa, Canada
(1902)1909
- THAYER, JOHN ELIOT, Lancaster, Mass. (1898)1905
- TODD, W. E. CLYDE, Carnegie Museum, Pittsburgh, Pa. (1890)1901
- TOWNSEND, CHARLES H., Aquarium, Battery Park, New York City
(1883)1901
- TOWNSEND, Dr. CHARLES WENDELL, 76 Marlborough St., Boston,
Mass. (1901)1905
- TROTTER, Dr. SPENCER, Swarthmore College, Swarthmore, Pa. (1888)1901
- WARREN, EDWARD ROYAL, 20 West Caramillo St., Colorado Springs,
Colo. (1902)1910

WAYNE, ARTHUR T., Mt. Pleasant, S. C.	(1905)1909
WETMORE, ALEX., Biological Survey, Washington, D. C.	(1908)1912
WILLETT, GEORGE, 2123 Court St., Los Angeles, Cal.	(1912)1914
WOLCOTT, DR. ROBERT H., Univ. of Nebraska, Lincoln, Neb.	(1901)1903
WOOD, NORMAN A., Museum Univ. of Mich., Ann Arbor, Mich.	(1904)1912
WRIGHT, MRS. MABEL OSGOOD, Fairfield, Conn.	(1895)1901

ASSOCIATES.

ABBOTT, CLINTON GILBERT, Plandome, N. Y.	1898
ADAMS, BENJAMIN, 476 5th Ave., New York City.	1911
ADAMS, WALLACE, U. S. Indian Service, Florence, Ariz.	1901
ADAMS, DR. Z. B., 42 Cottage Farm Rd., Brookline, Mass.	1908
AIKEN, HON. JOHN, Superior Court, Court House, Boston, Mass.	1905
AKELEY, CARL E., American Museum Nat. Hist., New York City.	1913
ALEXANDER, MISS ANNIE M., 92 Sea View Ave., Piedmont, Cal.	1911
ALLEN, MARY P., 206 Moon St., Hackettstown, N. J.	1913
AMES, JOHN S., North Easton, Mass.	1913
ANDERSON, MRS. J. C., Great Barrington, Mass.	1903
ANDREWS, ROY C., Amer. Mus. Nat. Hist., New York City.	1906
ANGELL, WALTER A., 33 Westminster St., Providence, R. I.	1901
ANTHONY, H. E., Amer. Mus. Nat. Hist., New York City.	1911
ANTHONY, MRS. P. REED, 113 Commonwealth Ave., Boston, Mass.	1913
ARCHBOLD, JOSEPH A., 107 Hodge Ave., Buffalo, N. Y.	1903
ARMSTRONG, EDWARD E., 207 N. Michigan Ave., Chicago, Ill.	1904
ARNOLD, EDWARD, Grand Trunk R'y., Montreal, Quebec.	1894
ARNOLD, F. E., 284 Pleasant St., East Providence, R. I.	1909
ARNOLD, DR. W. W., 504 N. Nevada Ave., Colorado Springs, Colo.	1910
AVIS, EDWARD, Box 56, Enfield, Conn.	1908
BABCOCK, DEAN, Estes Park, Colo.	1911
BABSON, MRS. CAROLINE W., 182 Granite St., Pigeon Cove, Mass.	1912
BAILEY, DR. B. H., 1417 1st Ave., Cedar Rapids, Ia.	1913
BAILEY, PROF. G. A., Geneseo, N. Y.	1910
BAILEY, HAROLD H., 310 50th St., Newport News, Va.	1903
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BAKER, FRANK C., Chicago Acad. Sciences, Chicago, Ill.	1907
BAKER, JOHN H., 7 Holyoke Place, Cambridge, Mass.	1911
BALDWIN, ROGER N., 600-911 Locust St., St. Louis, Mo.	1904
BALES, DR. BLENN R., 149 W. Main St., Circleville, Ohio.	1907
BALL, MRS. BENNET F., Oakville, Conn.	1905
BALL, DAVID S., 622 W. 113 St., New York City.	1913
BALL, MISS HELEN AUGUSTA, 43 Laurel St., Worcester, Mass.	1893
BALL, JAS. P., 5001 Frankford Ave., Philadelphia, Pa.	1911
BANKS, MISS MARTHA B., Westport, Conn.	1911

BARBOUR, REV. ROBERT, Y. M. C. A., Montclair, N. J.	1902
BARNARD, Judge JOB, 1306 Rhode Island Ave., Washington, D. C.	1886
BARNES, Hon. R. MAGOON, Lacon, Ill.	1889
BARRETT, CHAS. H. M., Biological Survey, Washington, D. C.	1912
BARRETT, HAROLD LAWRENCE, 704 Centre St., Jamaica Plain, Mass.	1909
BARRY, Miss ANNA K., 5 Bowdoin Ave., Dorchester, Mass.	1907
BARTLETT, Miss MARY F., 227 Commonwealth Ave., Boston, Mass.	1912
BARTLETT, WM. M., 410 Hotel Princeton, Allston, Mass.	1913
BARTRAM, EDWIN B., 131 Beech Tree Lane, Wayne, Pa.	1913
BATTEN, GEORGE, 93 Union St., Montclair, N. J.	1911
BATTEN, GEORGE, JR., 381 Fourth Ave., New York City.	1914
BAYNARD, OSCAR E., Box 328, Clearwater, Fla.	1910
BAYNES, ERNEST H., Meriden, N. H.	1912
BECK, ROLLO HOWARD, San José, R. D. 21, Cal.	1894
BELL, Prof. W. B., Agricultural College, N. D.	1912
BENNETT, Rev. GEO., Iowa City, Ia.	1913
BENNETT, WILLIAM J., 1941 1st St. N. W., Washington, D. C.	1901
BERIER, DE LAGNEL, 171 Monte Vista Place, Ridgewood, N. J.	1885
BETTS, NORMAN DE WITT, Forest Products Lab., Madison, Wis.	1908
BICKNELL, Mrs. F. T., 319 S. Normandie Ave., Los Angeles, Cal.	1913
BIDDLE, Miss EMILY WILLIAMS, 2201 Sansom St., Philadelphia, Pa.	1898
BIGELOW, ALBERT F., 84 State St., Boston, Mass.	1910
BIGELOW, HENRY BRYANT, Concord, Mass.	1897
BIGELOW, Dr. LYMAN F., 80 Winter St., Norwood, Mass.	1914
BIGGESTONE, HARRY C., 3918 Fourth Ave., Sioux City, Ia.	1913
BLACKWELDER, ELIOT, Univ. of Wisconsin, Madison, Wis.	1895
BLAIN, MERRILL W., 1026 N. Coronado St., Los Angeles, Cal.	1910
BLAKE, SIDNEY F., 154 Walnut St., Stoughton, Mass.	1910
BLOOMFIELD, Mrs. C. C., 723 Main St., W., Jackson, Mich.	1901
BOARDMAN, Miss E. D., 416 Marlborough St., Boston, Mass.	1906
BODINE, DONALDSON, 4 Mills Place, Crawfordsville, Ind.	1913
BOGARDUS, Miss CHARLOTTE, Elm St., Coxsackie, N. Y.	1909
BOGERT, WILLIAM S., 1000 Garden St., Bellingham, Wash.	1904
BOLLES, Mrs. FRANK, 6 Berkeley St., Cambridge, Mass.	1912
BOLT, BENJAMIN FRANKLIN, 1421 Prospect Ave., Kansas City, Mo.	1909
BOND, HARRY L., Lakefield, Minn.	1908
BONFILS, F. G., 1003 Corona St., Denver, Colo.	1912
BORLAND, WM. G., 14 Wall St., New York City.	1911
BORNEMAN, HENRY S., 1613 Dyre St., Frankford, Philadelphia, Pa.	1912
BOSSON, CAMPBELL, 722 Tremont Bldg., Boston, Mass.	1906
BOURNE, THOS. L., Hamburg, N. Y.	1914
BOWDISH, B. S., Demarest, N. J.	1891
BOWDISH, Mrs. B. S., Demarest, N. J.	1902
BOWDITCH, HAROLD, 60 Harvard Ave., Brookline, Mass.	1900
BOWDITCH, JAMES H., 903 Tremont Bldg., Boston, Mass.	1913
BOYNTON, CHAS. T., 1005 South Sheridan Rd., Highland Park, Ill.	1912

BRACKEN, MRS. HENRY M., 1010 Fourth St., S. E., Minneapolis, Minn.	1897
BRADFORD, MOSES B. L., Concord Public Library, Concord, Mass.	1889
BRADLEE, THOMAS STEVENSON, Somerset Club, Boston, Mass.	1902
BRANDRETH, COURTENAY, Ossining, N. Y.	1905
BRANDRETH, FRANKLIN, Ossining, N. Y.	1889
BREWSTER, EDWARD EVERETT, 316 East C St., Iron Mountain, Mich.	1893
BREWSTER, MRS. WILLIAM, 145 Brattle St., Cambridge, Mass.	1912
BRIDGE, EDMUND, 52 Wyman St., West Medford, Mass.	1910
BRIDGE, MRS. EDMUND, 52 Wyman St., West Medford, Mass.	1902
BRIGGS, S. MENDALL, Manomet, Mass.	1913
BRIMLEY, H. H., Raleigh, N. C.	1904
BRISTOL, JOHN I. D., 1 Madison Ave., New York City	1907
BRITTEN, G. S., 302 University Bldg., Syracuse, N. Y.	1913
BROCK, DR. HENRY HERBERT, 687 Congress St, Portland, Me.	1894
BROCKWAY, ARTHUR W., Hadlyme, Conn.	1912
BROOKS, REV. EARLE AMOS, 419 N. River Ave., Weston, W. Va.	1892
BROOKS, GORHAM, 37½ Beacon St., Boston, Mass.	1912
BROOKS, LAWRENCE, Milton, Mass.	1912
BROOKS, MISS MARTHA W., Petersham, Mass.	1913
BROOKS, WINTHROP S., Milton, Mass.	1907
BROWN, MISS ANNIE H., 31 Maple St., Stoneham, Mass.	1909
BROWN, EDWARD J., U. S. Nat. Museum, Washington, D. C.	1891
BROWN, H. A., 40 Talbot St., Lowell, Mass.	1912
BROWN, MRS. HENRY T., Lancaster, Mass.	1912
BROWN, HUBERT H., Beamsville, Ontario	1889
BROWN, MRS. J., Jr., 71 Bay State Road, Boston, Mass.	1913
BROWN, PHILIP G., 85 Vaughan St., Portland, Me.	1911
BROWN, STEWARDSON, 20 E. Penn St., Germantown, Philadelphia, Pa.	1895
BROWN, WM. JAMES, 250 Oliver Ave., Westmount, Quebec	1908
BROWNING, WM. HALL, 16 Cooper Square, New York City	1911
BRUEN, FRANK, 65 Prospect St., Bristol, Conn.	1908
BRYANT, HAROLD CHILD, Univ. of California, Berkeley, Cal.	1913
BURBANK, CHAS. O., 48 Glenwood Ave., Newton Centre, Mass.	1912
BURGESS, JOHN KINGSBURY, Chestnut St., Dedham, Mass.	1898
BURLEIGH, THOS. D., 825 N. Wigley Ave., Pittsburg, Pa.	1913
BURNETT, WILLIAM L., State Agric. College, Fort Collins, Colo.	1895
BURNHAM, JOHN BIRD, 233 Broadway, New York City	1912
BURT, HENRY P., 316 W. 93d St., New York City	1908
BURTCH, VERDI, Branchport, N. Y.	1903
BUXBAUM, MRS. CLARA E., 4822 Grand Boulevard, Chicago, Ill.	1895
CABOT, LOUIS, Brookline, Mass.	1904
CADUC, EUGENE E., 563 Massachusetts Ave., Boston, Mass.	1910
CALLENDER, JAMES PHILLIPS, 32 Broadway, New York City	1903
CALVERT, J. FLETCHER, 596 Princess Ave., London, Ont.	1912
CAMPBELL, CLARA D., 1253 Beacon St., Brookline, Mass.	1913
CARPENTER, REV. CHARLES KNAPP, 311 Park St., Elgin, Ill.	1894

CARPENTER, GEORGE I., 129 Dean St., Brooklyn, N. Y.....	1907
CARRIGER, H. W., 5185 Trask St., Fruitvale Station, Oakland, Cal....	1913
CARTER, JOHN D., Lansdowne, Pa.....	1907
CASE, CLIFFORD M., 7 Holcomb St., Hartford, Conn.....	1892
CASH, HARRY A., 54 Spring St., Pawtucket, R. I.....	1898
CHAMBERLAIN, CHAUNCEY W., 36 Lincoln St., Boston, Mass.....	1885
CHAPIN, Prof. ANGIE CLARA, 18 Morris Crescent, Yonkers, N. Y.....	1896
CHAPIN, JAMES, 330 W. 95th St., New York City.....	1906
CHAPMAN, Mrs. F. M., Englewood, N. J.....	1908
CHAPMAN, ROY, 2316 Pierce Ave., St. Anthony Park, St. Paul, Minn....	1911
CHASE, SIDNEY, 244 Marlborough St., Boston, Mass.....	1904
CHEESMAN, M. R., 55 W. 4th St., S., Salt Lake City, Utah.....	1911
CHIPMAN, Miss GRACE E., Sandwich, Mass.....	1912
CHRISTY, BAYARD H., 403 Frederick Ave., Sewickley, Pa.....	1901
CLARK, CLARENCE H., Lubec, Me.....	1913
CLARK, H. WALTON, Fairport, Ia.....	1913
CLARK, JOSIAH H., 238 Broadway, Paterson, N. J.....	1895
CLARKE, CHARLES E., 11 Chetwynd Road, Tufts College, Mass.....	1907
CLARKE, Miss HARRIET E., 9 Chestnut St., Worcester, Mass.....	1896
CLARKE, ROWENA A., Kirkwood, Mo.....	1906
CLARKE, Dr. WM. C., Tenafly, N. J.....	1909
CLEAVES, HOWARD H., Public Museum, New Brighton, N. Y.....	1907
CLEVELAND, Dr. CLEMENT, 925 Park Ave., New York City.....	1903
CLEVELAND, Miss LILIAN, Woods Edge Road, West Medford, Mass....	1906
COALE, HENRY K., Highland Park, Ill.....	1883
COBB, Miss ANNA E., 322 Broadway, Providence, R. I.....	1913
COBB, Miss ANNIE W., 301 Massachusetts Ave., Arlington, Mass.....	1909
COBB, STANLEY, 340 Adams St., Milton, Mass.....	1909
COFFIN, Mrs. P. B., 3232 Groveland Ave., Chicago, Ill.....	1905
COGGINS, HERBERT L., 2929 Piedmont Ave., Berkeley, Cal.....	1913
COLBURN, ALBERT E., 806 S. Broadway, Los Angeles, Cal.....	1891
COLE, Dr. LEON J., College of Agric., Univ. of Wis., Madison, Wis....	1908
COLVIN, WALTER S., Osawatomie, Kan.....	1896
COMMONS, Mrs. F. W., 2437 Park Ave., Minneapolis, Minn.....	1902
CONEY, Mrs. GEO. H., R. F. D., Box 25, Windsor, Conn.....	1906
COOK, Miss LILIAN GILLETTE, Long Lea Farm, Amherst, Mass.....	1899
COPE, FRANCIS R., Jr., Dimock, Pa.....	1892
COPELAND, Dr. ERNEST, 141 Wisconsin St., Milwaukee, Wis.....	1897
COPELAND, MANTON, 88 Federal St., Brunswick, Me.....	1900
COULTER, STANLEY, Lafayette, Ind.....	1912
CRAIG, WALLACE, Orono, Me.....	1912
CRAIGMILE, Miss ESTHER A., 24 S. Grant St., Hinsdale, Ill.....	1910
CRAM, R. J., 26 Hancock Ave., W., Detroit, Mich.....	1893
CRANDALL, C. W., 10 Third St., Woodside, N. Y.....	1891
CRANE, Miss CLARA L., Dalton, Mass.....	1904
CRANE, Mrs. ZENAS, Dalton, Mass.....	1904

CREHORE, FREDERIC M., 87 Milk St., Boston, Mass.....	1913
CRESSY, Mrs. N. S., Avon Road, Unionville, Conn.....	1912
CRITTENDEN, VIOLA E., Shelburne Falls, Mass.....	1913
CROCKER, Mrs. DAVID, Barnstable, Mass.....	1912
CROCKER, Mrs. EMMONS, 48 Mechanics St., Fitchburg, Mass.....	1912
CROSBY, MAUNSELL S., Rhinebeck, N. Y.....	1904
CULVER DELOS E., Addingham, Pa.....	1913
CUMMINGS, Miss EMMA G., 16 Kennard Road, Brookline, Mass.....	1903
CURRIE, ROLLA P., 632 Keefer Place N. W., Washington, D. C.....	1895
CURRIER, B. H., 79 Milk St., Boston, Mass.....	1913
CURRIER, EDMONDE SAMUEL, St. Johns, Ore.....	1894
CUSHMAN, Miss ALICE, 919 Pine St., Philadelphia, Pa.....	1910
CUTLER, Mrs. ANNIE F., 117 Washington Ave., Chelsea, Mass.....	1908
DANA, Miss ADA, 488 Centre St., Newton, Mass.....	1912
DANE, Mrs. ERNEST B., Chestnut Hill, Mass.....	1912
DAVENPORT, Mrs. ELIZABETH B., Lindenhurst, Brattleboro, Vt.....	1898
DAVIDSON, Mrs. FRANCIS S., 1302 W., S. Grand Ave., Springfield, Ill.....	1912
DAVIS, CHARLES H., 515 N. Michigan Ave., Saginaw, Mich.....	1906
DAY, CHESTER SESSIONS, 15 Chilton Road, West Roxbury, Mass.....	1897
DAY, Miss E. S., 339 Bainbridge St., Brooklyn, N. Y.....	1914
DAY, FRANK MILES, Mt. Airy, Philadelphia, Pa.....	1901
DEAN, R. H., 300 St. Vincent Ave., St. Louis, Mo.....	1913
DEANE, DANIEL WHITMAN, Box 425, Fairhaven, Mass.....	1913
DEANE, GEORGE CLEMENT, 80 Sparks St., Cambridge, Mass.....	1899
DELOACH, R. J. H., Georgia Experiment Station, Experiment, Ga.....	1910
DENSMORE, Miss MABEL, 629 4th St., Red Wing, Minn.....	1910
DERBY, RICHARD, 969 Park Ave., New York City.....	1898
DERICKSON, Mrs. GEO. P., 238 W. Franklin Ave., Minneapolis, Minn.....	1910
DEVINE, J. L., 5319 Woodlawn Ave., Chicago, Ill.....	1903
DEWEY, Dr. CHARLES A., 78 Plymouth Ave., Rochester, N. Y.....	1900
DICKERSON, Miss MARY C., Am. Mus. Nat. Hist., New York City.....	1908
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DICKEY, SAMUEL S., Waynesburg, Pa.....	1905
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DIMOCK, GEO. E., Jr., 907 N. Broad St., Elizabeth, N. J.....	1911
DIONNE, C. E., Laval University, Quebec, Canada.....	1893
DIXON, FREDERICK J., 111 Elm Ave., Hackensack, N. J.....	1891
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DORN, Prof. L., Concordia College, Fort Wayne, Ind.....	1912
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DRUMMOND, Miss MARY, Spring Lane, Lake Forest, Ill.....	1904
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DUNBAR, W. LINFRED, U. M. C. Co., Bridgeport, Conn.....	1906
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DURYEA, Miss ANNIE B., 62 Washington St., Newark, N. J.....	1911

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EARLY, CHAS. H., 185 Fairmont Ave., Hyde Park, Mass.....	1912
EASTMAN, FRANCIS B., Plattsburg Barracks, N. Y.....	1909
EATON, MISS MARY S., 8 Monument St., Concord, Mass.....	1909
EATON, SCOTT HARRISON, Malcolm Hotel, Lawrenceville, Ill.....	1912
EDSON, JOHN M., Marietta Road, Bellingham, Wash.....	1886
EDWARDS, PHOEBE P., Brookline, Mass.....	1912
EDWARDS, VINAL N., Box 54, Woods Hole, Mass.....	1912
EHINGER, DR. CLYDE E., 100 Rosedale Ave., West Chester, Pa.....	1904
EICHE, AUGUST, 1133 O St., Lincoln, Neb.....	1902
EIFRIG, REV. C. W. GUSTAVE, Concordia Teachers College, Oak Park, Ill.....	1913
EIMBECK, DR. A. F., New Haven, Mo.....	1906
EKBLAW, WALTER ELMER, care of G. Ekblaw, Rantoul, Ill.....	1911
ELDRIDGE, ARTHUR S., South Lincoln, Mass.....	1912
ELLIOT, MRS. J. W., 124 Beacon St., Boston, Mass.....	1912
ELLS, GEORGE P., Norwalk, Conn.....	1904
EMMET, CHRISTOPHER TEMPLE, Stony Brook, N. Y.....	1909
EMMET, ROBERT T., New Rochelle, N. Y.....	1904
EMMONS, RUPERT A., 17 T St., N. E., Washington, D. C.....	1913
EMORY, MRS. MARY DILLE, 156 Foundry St., Morgantown, W. Va.....	1899
ENDERS, JOHN O., 17 Highland St., Hartford, Conn.....	1904
EVANS, WILLIAM B., Westtown, Pa.....	1897
FARLEY, JOHN A., 52 Cedar St., Malden, Mass.....	1904
FAY, S. PRESCOTT, 3 Brimmer St., Boston, Mass.....	1907
FELGER, ALVA HOWARD, North Side High School, Denver, Colo.....	1898
FELL, MISS EMMA TREGO, 1534 N. Broad St., Philadelphia, Pa.....	1903
FELTON, W. R., Lone Tree, Mont.....	1910
FERGUSON, MRS. MARY VAN E., 5 Panoramic Way, Berkeley, Cal.....	1912
FERRY, MISS MARY B., 19 Morgan Ave., Norwalk, Conn.....	1912
FIELD, EDWARD B., 30 Gillette St., Hartford, Conn.....	1898
FIELD, DR. GEO. W., Sharon, Mass.....	1910
FINDLAY, D. DOUGLAS, Carleton Place, Ontario, Canada.....	1914
FISHER, MISS ELIZABETH WILSON, 2222 Spruce St., Philadelphia, Pa.....	1896
FISHER, G. CLYDE, American Mus. Nat. Hist., New York City.....	1908
FLANAGAN, JOHN H., 89 Power St., Providence, R. I.....	1898
FLETCHER, MRS. MARY E., Proctorsville, Vt.....	1898
FLOYD, WILLIAM, 84 William St., New York City.....	1913
FOLK, JOHN P., 104 Franklin St., Suffolk, Va.....	1913
FOOTE, MISS F. HUBERTA, 90 Locust Hill Ave., Yonkers, N. Y.....	1897
FORBES, ALEXANDER, Milton, Mass.....	1912
FORDYCE, GEO. L., 40 Lincoln Ave., Youngstown, Ohio.....	1901
FOWLER, FREDERICK HALL, 221 Kingsley Ave., Palo Alto, Cal.....	1892
FOWLER, HENRY W., Acad. Nat. Sciences, Philadelphia, Pa.....	1898
FOX, DR. WILLIAM H., 1826 Jefferson Place, Washington, D. C.....	1883
FRANCIS, NATHANIEL A., 35 Davis Ave., Brookline, Mass.....	1913

FRASER, DONALD, Johnstown, N. Y.	1902
FREEMAN, Miss HARRIET E., 37 Union Park, Boston, Mass.	1903
FRENCH, CHARLES H., Canton, Mass.	1904
FRENCH, Mrs. CHAS. H., Canton, Mass.	1908
FULLER, T. OTIS, Needham, Mass.	1904
FULLER, Mrs. T. Otis, Needham, Mass.	1909
FUNKHOUSER, W. D., 415 N. Tioga St., Ithaca, N. Y.	1913
GABRIELSON, IRA N., 206 N. 1st Ave., Marshalltown, Iowa.	1912
GARDINER, CHARLES BARNES, 5 Minard Place, Norwalk, Ohio.	1903
GEORGE, Mrs. W. W., 1312 Market St., Parkersburg, W. Va.	1912
GERTKEN, SEVERIN, Prof. St. Johns University, Collegeville, Minn.	1912
GIANINI, CHAS. A., Poland, N. Y.	1911
GIBSON, LANGDON, 5 Union St., Schenectady, N. Y.	1904
GILMAN, M. FRENCH, Fort Bidwell, Cal.	1907
GLADDING, Mrs. JOHN R., 30 Stimson Ave., Providence, R. I.	1912
GLEASON, ALFRED D., Gleasondale, Mass.	1912
GOLSAN, LEWIS S., Autaugaville, Ala.	1912
GOODALE, Dr. JOSEPH LINCOLN, 258 Beacon St., Boston, Mass.	1885
GOODRICH, JULIET T., 1210 Astor St., Chicago, Ill.	1904
GORDON, HARRY E., 313 Laburnum Ave., Rochester, N. Y.	1911
GOULD, Dr. ALFRED M., Malden, Mass.	1912
GOULD, JOSEPH E., 5 Clifton St., Norfolk, Va.	1889
GRAHAM, WM. J., Aledo, Ill.	1909
GRANGER, Miss HELEN, 65 Langdon St., Cambridge, Mass.	1904
GRANGER, WALTER, Amer. Mus. Nat. Hist., New York City.	1891
GRANT, WM. W., 489 Castle St., Geneva, N. Y.	1910
GRAVES, Mrs. CHARLES B., 4 Mercer St., New London, Conn.	1905
GRAY, Miss ELIZABETH F., 870 High St., Dedham, Mass.	1913
GRAY, Miss ISA E., 5 Chestnut St., Boston, Mass.	1912
GREEN, Miss MARY AMORY, Croton-on-Hudson, N. Y.	1911
GREENOUGH, HENRY VOSE, 23 Monmouth Court, Brookline, Mass.	1909
GREGORY, STEPHEN S., Jr., 1349 Astor St., Chicago, Ill.	1906
GRISCOM, LUDLOW, 21 Washington Sq., N., New York City.	1908
GRONBERGER, S. M., Smithsonian Inst., Washington, D. C.	1909
GROSS, ALFRED O., 17 McKeen St., Brunswick, Me.	1907
GROSVENER, GILBERT H., National Geog. Soc., Washington, D. C.	1913
GUILD, HENRY R., 102 Beacon St., Boston, Mass.	1912
GUTSELL, JAMES S., 301 College Ave., Ithaca, N. Y.	1911
HADLEY, ALDEN H., Monrovia, Indiana.	1906
HAGAR, J. A., 79 Washington Park, Newtonville, Mass.	1914
HALL, FRANK H., Agricultural Experiment Station, Geneva, N. Y.	1910
HALLETT, GEO. H., Jr., Haverford College, Haverford, Pa.	1911
HANKINSON, THOS. LEROY, Charleston, Ill.	1897
HARDON, Mrs. HENRY W., 315 West 71st St., New York City.	1905
HARPER, FRANCIS, 555 First Ave., College Point, N. Y.	1907
HARRINGTON, Mrs. W. R., 11 Ave., and 47th St., New York City.	1913

HARRIS, HARRY, Kansas City, Mo.....	1911
HARVEY, Miss RUTH SAWYER, 1203 Woodland Ave., Cincinnati, Ohio.....	1902
HASKELL, WM. S., Woolworth Building, New York City.....	1913
HATHAWAY, HARRY S., Box 1466, Providence, R. I.....	1897
HAVEMEYER, H. O., Jr., Mahwah, N. J.....	1893
HAZARD, Hon. ROWLAND G., Peace Dale, R. I.....	1885
HELME, ARTHUR H., Miller Place, N. Y.....	1888
HEMENWAY, Mrs. AUGUSTUS, Readville, Mass.....	1912
HENDERSON, Judge JUNIUS, 627 Pine St., Boulder, Colo.....	1903
HENDRICKSON, W. F., 276 Hillside Ave., Jamaica, N. Y.....	1885
HENNESSEY, FRANK, Winona Lake College, Winona Lake, Ind.....	1914
HERRICK, FRANCIS H., Adelbert College, Cleveland, Ohio.....	1913
HERRICK, HAROLD, 25 Liberty St., New York City.....	1905
HERRICK, NEWBOLD L., Cedarhurst, N. Y.....	1913
HERSEY, F. SEYMOUR, 6 Maple Ave., Taunton, Mass.....	1911
HERSEY, L. J., Wray, Colo.....	1909
HESS, ISAAC E., Philo, Ill.....	1909
HIGBEE, HARRY G., 13 Austin St., Hyde Park, Mass.....	1900
HIGGINS, HENRY CHAS., Uxbridge, Mass.....	1912
HILL, JAMES HAYNES, Box 485, New London, Conn.....	1897
HILL, Mrs. THOMAS R., 4629 Baltimore Ave., Philadelphia, Pa.....	1903
HINCKLEY, GEO. LYMAN, Redwood Library, Newport, R. I.....	1912
HINCKLEY, HENRY H., 50 West Hill Ave., Melrose Highlands, Mass.....	1912
HINE, Prof. JAMES STEWART, Ohio State Univ., Columbus, Ohio.....	1899
HINE, Mrs. JANE L., Auburn, Ind.....	1890
HITCHCOCK, FRANK H., Metropolitan Club, New York City.....	1891
HIX, GEORGE E., 100 W. 91st St., New York City.....	1904
HODGE, Prof. CLIFTON FREMONT, State University, Eugene, Oregon.....	1899
HOLDEN, Mrs. EDWIN B., 323 Riverside Drive, New York City.....	1903
HOLDEN, Mrs. EMELINE R., 13 E. 79th St., New York City.....	1902
HOLLAND, HAROLD MAY, Galesburg, Ill.....	1910
HOLLAND, Dr. WILLIAM J., Carnegie Museum, Pittsburgh, Pa.....	1899
HOLLISTER, WARREN D., McPhee Bldg., Denver, Colo.....	1901
HOLMAN, RALPH H., 33 Chestnut St., Stoneham, Mass.....	1907
HOLT, ERNEST G., Biological Survey, Washington, D. C.....	1911
HOLT, Mrs. NANCY W. C., 13 Chauncey St., Cambridge, Mass.....	1908
HONYWILL, ALBERT W., Jr., 522 Holmes St., Wilkesburg, Pa.....	1907
HORSFALL, BRUCE, Princeton, N. J.....	1905
HOTCHKISS, Miss JULIA R., 502 W. 113 St., New York City.....	1912
HOWE, Dr. REGINALD HEBER, Jr., Thoreau Museum, Concord, Mass.....	1895
HOWELL, A. BRAZIER, Covina, Cal.....	1909
HOWELL, BENJ. F., Jr., R. F. D. 1., Boonton, N. J.....	1907
HOWES, PAUL GRISWOLD, Maplewood Biol. Laborat., Stamford, Conn.....	1913
HOWLAND, R. H., 164 Wildwood Ave., Upper Montclair, N. J.....	1912
HOYT, Miss ANNIE S., 160 Lexington Ave., New York City.....	1909

HOYT, WILLIAM H., Box 425, Stamford, Conn.....	1907
HUBBARD, DR. LUCIUS L., Houghton, Mich.....	1907
HUBBARD, MRS. SARA A., 177 Woodruff Ave., Brooklyn, N. Y.....	1891
HUDSON, MRS. K. W., The Bellevue, Intervale, N. H.....	1911
HULL, EDWIN D., 6024 Ellis Ave., Chicago, Ill.....	1913
HUNN, JOHN T. SHARPLESS, 1218 Prospect Ave., Plainfield, N. J.....	1895
HUTCHINSON, DR. W. F., Box 42, Portsmouth, Va.....	1910
INGALLS, CHARLES E., East Templeton, Mass.....	1885
INGERSOLL, ALBERT M., 908 F St., San Diego, Cal.....	1885
IRVING, JOHN, Glen Cove, N. Y.....	1894
ISHAM, C. B., 27 W. 67 St., New York City.....	1891
IVES, H. DAVID, Southampton, N. Y.....	1912
JACKSON, HARTLEY, H. T., Biological Survey, Washington, D. C.....	1910
JACKSON, THOMAS H., 304 N. Franklin St., West Chester, Pa.....	1888
JAMES, NORMAN, N. W. James Lumber Co., Baltimore, Md.....	1913
JARVES, MISS FLORA AMY, Box 151, Kingston Hill, R. I.....	1913
JENKINS, MISS IDA G., 30 Dearborne St., Roxbury, Mass.....	1912
JENKS, CHAS. W., Bedford, Mass.....	1912
JENNEY, CHARLES F., 100 Gordon Ave., Hyde Park, Mass.....	1905
JENNINGS, RICHARD D., 129 Harrison St., East Orange, N. J.....	1913
JENSEN, J. K., Westwood, Mass.....	1912
JEWEL, LINDSEY L., Wytheville, Va.....	1910
JEWETT, STANLEY G., 582 Bidwell Ave., Portland, Oregon.....	1906
JOHNS, ERWIN WM., 19 West Market St., Iowa City, Iowa.....	1910
JOHNSON, CHAS. E., 714 16 Ave., S. E., Minneapolis, Minn.....	1912
JOHNSON, FRANK EDGAR, 16 Amackassin Terrace, Yonkers, N. Y.....	1888
JOHNSON, MRS. GRACE PETTIS, City Library Asso., Springfield, Mass.....	1908
JOHNSON, JULIUS M., 77 Herkimer St., Brooklyn, N. Y.....	1913
JOHNSON, WALTER ADAMS, 120 W. 32d St., New York City.....	1889
JOHNSON, WILBUR WALLACE, 144 Harrison St., East Orange, N. J.....	1914
JOHNSON, WILLIAM S., Lyons, N. Y.....	1893
JONES, F. W., 563 Massachusetts Ave., Boston, Mass.....	1912
JONES, DR. LOMBARD C., Falmouth, Mass.....	1912
JORDAN, A. H. B., Lowell, Wash.....	1888
JUMP, MRS. EDWIN R., 59 Boyd St., Newton, Mass.....	1910
JUSTICE, HENRY, Devon, Pa.....	1913
KALMBACH, EDWIN R., Biological Survey, Washington, D. C.....	1910
KEAYS, JAMES EDWARD, 328 St. George St., London, Ontario.....	1899
KEIM, THOMAS DANIEL, Fellowship Farm, Stelton, N. J.....	1902
KELLOGG, RALPH T., Silver City, N. M.....	1913
KENT, DUANE E., 47 West St., Rutland, Vt.....	1913
KENT, EDWIN C., 90 West St., New York City.....	1907
KERMODE, FRANCIS, Provincial Museum, Victoria, B. C.....	1904
KEYES, PROF. CHAS. R., Mt. Vernon, Ia.....	1904
*KIDDER, NATHANIEL T., Milton, Mass.....	1906

*Life Associate.

KIHN, WILFRED L., 755 Eastern Parkway, Brooklyn, N. Y.....	1913
KILGORE, WILLIAM, JR., 4304 Colfax Ave., S., Minneapolis, Minn.....	1906
KING, LE ROY, 20 E. 84th St., New York City.....	1901
KIRKHAM, MRS. JAMES W., 275 Maple St., Springfield, Mass.....	1904
*KIRKHAM, STANTON D., 152 Howell St., Canandaigua, N. Y.....	1910
KIRKWOOD, FRANK C., Monkton, Md.....	1892
KITTREDGE, JOSEPH JR., U. S. Forest Service, Missoula, Mont.....	1910
KLOSEMAN, MISS JESSIE E., 44 Bullard St., Dedham, Mass.....	1909
KNAEBEL, ERNEST, 3707 Morrison St., Chevy Chase, D. C.....	1906
KNAPP, MRS. HENRY A., 301 Quincy Ave., Scranton, Pa.....	1907
KNOLHOFF, FERDINAND WILLIAM, 40 E. 42d St., New York City.....	1890
KRETZMAN, Prof. P. E., 1230 St. Anthony Ave., St. Paul, Minn.....	1913
KUSER, ANTHONY R., Bernardsville, N. J.....	1908
KUSER, MRS. ANTHONY R., Bernardsville, N. J.....	1910
KUSER, JOHN DRYDEN, Bernardsville, N. J.....	1910
KUTCHIN, Dr. VICTOR, Green Lake, Wis.....	1905
La DOW, STANLEY V., 610 W. 116th St., New York City.....	1913
LACEY, HOWARD GEORGE, Kerrville, Texas.....	1899
LAMB, CHAS. R., 159 Brattle St., Cambridge, Mass.....	1912
LANCASHIRE, MRS. JAMES HENRY, Manchester, Mass.....	1909
LANG, HERBERT, Amer. Mus. Nat. Hist., New York City.....	1907
LATIMER, MISS CAROLINE P., 19 Pierrepont St., Brooklyn, N. Y.....	1898
LAURENT, PHILIP, 31 E. Mt. Airy Ave., Mt. Airy, Philadelphia, Pa.....	1902
LAW, J. EUGENE, Hollywood, Cal.....	1907
LAWRENCE, JOHN B., 126 E. 30th St., New York City.....	1907
LEE, HENRY E., Rapid City, S. D.....	1910
LEMAN, J. HOWARD, 48 Beacon St., Boston, Mass.....	1912
LEMSEN, NICHOLAS F., 34 Nassau St., New York City.....	1912
LENGERKE, JUSTUS VON, 200 5th Ave., New York City.....	1907
LEWIS, Dr. FREDERIC T., 76 Oxford St., Cambridge, Mass.....	1909
LEWIS, HARRISON F., R. R. 2 Yarmouth, Nova Scotia.....	1912
LEWIS, MRS. HERMAN, 120 Grove St., Haverhill, Mass.....	1912
LEWIS, L. ALVA, 608 Panama Bldg., Portland, Ore.....	1913
LIGON, STOKLEY, Chloride, New Mexico.....	1912
LINCOLN, FREDERICK CHARLES, Colo. Mus. Nat. Hist., Denver, Colo.....	1910
LINGS, GEO. H., 208 Piermont Ave., Nyack N. Y.....	1913
LINTON, CLARENCE B., 125 West Ocean Ave., Long Beach, Cal.....	1908
LINZEE, JOHN W., 96 Charles St., Boston, Mass.....	1912
LITTLE, LUTHER 2d, 1625 W. Adams St., Los Angeles, Cal.....	1913
LONGSTREET, RUBERT J., Stetson University, DeLand, Fla.....	1913
LORD, Rev. WILLIAM R., Dover, Mass.....	1901
LORING, MARION B., 914 High St., Dedham, Mass.....	1913
LOW, ETHELBERT T., 30 Broad St., New York City.....	1907
LUCE, MRS. FRANCES P., 140 Washington St., Boston, Mass.....	1912

*Life Associate.

LUM, EDWARD H., Chatham, N. J.	1904
LUTHER, Dr. CLARENCE H., 8 McIlroy Bldg., Fayetteville, Ark.	1910
MACKIE, Dr. WM. C., 54 Coolidge St., Brookline, Mass.	1908
MACLAY, MARK W., Jr., 830 Park Ave., New York City	1905
MADDOCK, Miss EMELINE, Hamilton Court, Philadelphia, Pa.	1897
MADISON, HAROLD L., Park Museum, Providence, R. I.	1912
MAHER, J. E., 351 Communipaw Ave., Jersey City, N. J.	1902
MAIN, FRANK H., Lanesboro, Mass.	1913
MAITLAND, ROBERT L., 141 Broadway, New York City	1889
MANN, ELIAS P., Williamstown, Mass.	1912
MAPLES, JAMES C., Port Chester, N. Y.	1913
MARBLE, RICHARD M., Woodstock, Vt.	1907
MARRS, Mrs. KINGSMILL, 9 Commonwealth Ave., Boston, Mass.	1903
MARSHALL, ELLA M. O., New Salem, Mass.	1912
MARTIN, Miss MARIA ROSS, Box 365, New Brunswick, N. J.	1902
MARX, EDWARD J. F., 207 Burke St., Easton, Pa.	1907
MASON, VINTON W., 12 Davenport St., Cambridge, Mass.	1913
MATTERN, EDWIN S., 1042 Walnut St., Allentown, Pa.	1912
MATTERN, WALTER I., 1042 Walnut St., Allentown, Pa.	1912
MAY, Miss ADELINA, 226 Ocean St., Lynn, Mass.	1912
MAYNARD, C. J., 447 Crafts St., West Newton, Mass.	1912
MCCCLINTOCK, NORMAN, 504 Amberson Ave., Pittsburgh, Pa.	1900
MCCONNELL, HARRY B., Cadiz, O.	1904
MCCOOK, PHILIP JAMES, 571 Park Ave., New York City	1895
MCHATTON, Dr. HENRY, 335 College St., Macon, Ga.	1898
McILHENNY, EDWARD AVERY, Avery Island, La.	1894
McINTIRE, Mrs. HERBERT BRUCE, 4 Garden St., Cambridge, Mass.	1908
McINTYRE, Mrs. J. W., 151 Franklin St., Newton, Mass.	1913
McLAIN, ROBERT BAIRD, Market and 12th Sts., Wheeling, W. Va.	1893
MCLEAN, Hon. GEO. P., Simsbury, Conn.	1913
McMAHON, WALT F., 74 Eddy St., West Newton, Mass.	1913
McMILLAN, Mrs. GILBERT, Gorham, N. H.	1902
MEAD, Mrs. E. M., 301 W. 91 St., New York City	1904
MEANS, CHAS. J., 29 Marlborough St., Boston, Mass.	1912
MENGEL, G. HENRY, 739 Madison Ave., Reading, Pa.	1913
MERRIAM, CHARLES, Weston, Mass.	1908
MERRIAM, HENRY F., 30 Clinton Ave., Maplewood, N. J.	1905
MERRILL, ALBERT R., Hamilton, Mass.	1912
MERRILL, D. E., State College, New Mexico	1913
MERRILL, HARRY, Bangor, Maine	1883
MERSHON, W. B., Saginaw, Mich.	1905
METCALF, WILLARD L., 16 Gramercy Park, New York City	1908
METCALF, Z. P., A & M. College, West Raleigh, N. C.	1913
MEYER, Lieut. G. RALPH, Ft. McKinley, Portland Harbor, Me.	1913
MEYER, Miss HELOISE, Lenox, Mass.	1913
MILLS, Prof. WILLIAM C., Ohio State Univ., Columbus, O.	1900

MINER, LEO D., 1836 Vernon St., N. W. Washington, D. C.....	1913
MISCHKE, GEO. M., 1122 49th St., Brooklyn, N. Y.....	1913
MITCHELL, CATHERINE ADAMS, Riverside, Ill.....	1911
MITCHELL, H. H., 2337 Smith St., Regina, Sask., Canada.....	1913
MITCHELL, DR. WALTON I., 603 Beacon Bldg., Wichita, Kan.....	1893
MOORE, CHAS. S., San Diego, Cal.....	1913
MOORE, MISS ELIZABETH PUTNAM, 5300 Media St., Philadelphia, Pa.....	1905
MOORE, HENRY D., Haddonfield, N. J.....	1911
MOORE, WILLIAM G., 257 W. Main St., Haddonfield, N. J.....	1910
MORCOM, G. FREAN, Box 175, Huntington Beach, Cal.....	1886
MORE, R. L., Vernon, Texas.....	1911
MORGAN, ALBERT S., Winfield, W. Va.....	1913
MORLEY, G. GRISWOLD, 2535 Etna St., Berkeley, Cal.....	1911
MORSE, ELIZA A., 21 Elm St., Worcester, Mass.....	1913
MORSE, HARRY GILMAN, Huron, Ohio.....	1912
MOSHER, FRANKLIN H., 17 Highland Ave., Melrose Highlands, Mass.....	1905
MUNRO, J. A., Okanagan Landing, British Columbia, Canada.....	1913
MURIES, O. J., Sellwood Y. M. C. A., Portland, Ore.....	1913
MURPHEY, DR. EUGENE E., 444 Tellfair St., Augusta, Ga.....	1903
MUSGRAVE, JOHN K., 3516 Shady Ave., Allegheny, Pa.....	1909
MYERS, MRS. HARRIET W., 311 Ave. 66, Los Angeles, Cal.....	1906
MYERS, MISS LUCY F., Brookside, Poughkeepsie, N. Y.....	1898
NELSON, JAMES ALLEN, Bethesda, Md.....	1898
NEWELL, MRS. H. S., 2431 E. 5th St., Duluth, Minn.....	1912
NEWMAN, REV. STEPHEN M., Howard University, Washington, D. C.....	1898
NIMS, MRS. LUCIUS, 5 Union St., Greenfield, Mass.....	1913
NOBLE, G. KINGSLEY, 13 Howland St., Cambridge, Mass.....	1913
NOLTE, REV. FELIX, St. Benedict's College, Atchison, Kan.....	1903
NORRIS, J. PARKER, JR., 2122 Pine St., Philadelphia, Pa.....	1904
NORRIS, ROY C., 725 N. 10th St., Richmond, Ind.....	1904
NOVY, FRANK ORIEL, 721 Forest Ave., Ann Arbor, Mich.....	1909
NOWELL, JOHN ROWLAND, Box 979, Schenectady, N. Y.....	1897
O'CONNELL, G. M., Cornell Heights, Ithaca, N. Y.....	1913
OGDEN, DR. HENRY VINING, 141 Wisconsin St., Milwaukee, Wis.....	1897
OHL, H. C., 1457 Jay St., Fresno, Cal.....	1913
OLDYS, HENRY, Silver Springs, Md.....	1896
*OLIVER, DR. HENRY KEMBLE, 2 Newbury, St., Boston, Mass.....	1900
ORDWAY, MISS ELIZABETH I., 20 Myrtle St., Winchester, Mass.....	1913
OSBORN, ARTHUR A., 58 Washington St., Peabody, Mass.....	1912
OTTEMILLER, FREE, 30 N. Pine St., York, Pa.....	1914
OVERTON, DR. FRANK, Patchogue, N. Y.....	1909
*OWEN, MISS JULIETTE AMELIA, 306 N. 9th St., St. Joseph, Mo.....	1897
PAINE, AUGUSTUS G., JR., 200 5th Ave., New York City.....	1886
PALADIN, ARTHUR, N. Y. State Museum, Albany, N. Y.....	1911

PALMER, S. C., Swarthmore College, Swarthmore, Pa.	1912
PANGBURN, CLIFFORD H., Lawrence Park, Bronxville, N. Y.	1907
PARKER, HON. HERBERT, South Lancaster, Mass.	1904
PARSONS, JOHN E., 30 E. 36th St., New York City.	1912
PAUL, LUCIUS H., 19 Aurora St., Rochester, N. Y.	1908
PEABODY, REV. P. B., Blue Rapids, Kan.	1903
PEAVEY, ROBERT W., 791 Coney Island Ave., Brooklyn, N. Y.	1903
PECK, MORTON E., 1458 Court St., Salem, Ore.	1909
PENARD, THOS. E., 16 Norfolk Rd., Arlington, Mass.	1912
PENFIELD, MISS ANNIE L., 155 Charles St., Boston, Mass.	1912
PENNINGTON, FRED ALBERT, 5529 Kenwood Ave., Chicago, Ill.	1910
PEPPER, DR. WM., 1811 Spruce St., Philadelphia, Pa.	1911
PERKINS, DR. GEO. H., Burlington, Vt.	1912
PERRY, DR. HENRY JOSEPH, 636 Beacon St., Boston, Mass.	1909
PETERS, ALBERT S., Lake Wilson, Minn.	1908
PETERS, JAMES LEE, Harvard, Mass.	1904
PHELPS, FRANK M., 212 E. 4th St., Elyria, Ohio.	1912
PHELPS, MRS. J. W., Box 36, Northfield, Mass.	1899
PHILHOWER, CHAS. A., Chatham, N. J.	1913
PHILIPP, PHILIP B., 220 Broadway, New York City.	1907
PHILLIPS, ALEXANDER H., 54 Hodge Road, Princeton, N. J.	1891
PHILLIPS, CHAS., 2506 Plymouth Ave., Minneapolis, Minn.	1914
PHILLIPS, CHAS. LINCOLN, 5 West Weir St., Taunton, Mass.	1912
PIERPONT, ANNA H., 59 Chestnut Ave., Waterbury, Conn.	1913
PINCHOT, GIFFORD, 1617 Rhode Island Ave., Washington, D. C.	1910
PLATT, MRS. DAN F., Englewood, N. J.	1913
POE, MISS MARGARETTA, 1204 N. Charles St., Baltimore, Md.	1899
POMEROY, HARRY KIRKLAND, R. F. D. 4, Kalamazoo, Mich.	1894
POND, MISS ELLEN J., 160 Lexington Ave., New York City.	1909
POPE, ALEXANDER, 1013 Beacon St., Brookline, Mass.	1908
POPE, E. F., Colmesneil, Texas.	1913
PORTER, REV. E. C., 24 Randolph St., Arlington, Mass.	1912
PORTER, LOUIS H., Stamford, Conn.	1893
POST, WM. S., 347 5th Ave., New York City.	1911
POTTER, JULIAN K., Camden, N. J.	1912
PRAEGER, WILLIAM E., 421 Douglas Ave., Kalamazoo, Mich.	1892
PRICE, JOHN HENRY, Crown W Ranch, Knowlton, Mont.	1906
PRICE, LIGON, R. F. D. 1, Box 44, Dunmore, W. Va.	1913
PRIMM, ROY LEE, 1113 W. Dayton St., Madison, Wis.	1912
PROCTOR, MRS. HENRY H., 282 Commonwealth Ave., Boston, Mass.	1912
PURDY, JAMES B., R. F. D. 4, Plymouth, Mich.	1893
PUTNAM, PROF. FRED W., Peabody Museum, Cambridge, Mass.	1912
RAMSDEN, CHAS. G., Box 146, Guantanamo, Cuba.	1912
RATHBORNE, R. C., 18 Congress St., Newark, N. J.	1911
RAWSON, CALVIN LUTHER, R. F. D. 2, Putnam, Conn.	1885
RAYMOND, MRS. C. E., 21 3d St., Hinesdale, Ill.	1910

REA, PAUL M., Charleston Museum, Charleston, S. C.	1912
REAGH, Dr. ARTHUR LINCOLN, 39 Maple St., West Roxbury, Mass.	1896
RECTOR, WILSON BLAINE, Belington, W. Va.	1913
REDFIELD, Miss ELISA WHITNEY, 29 Everett St., Cambridge, Mass.	1897
REED, HUGH DANIEL, 108 Brandon Place, Ithaca, N. Y.	1900
REHN, JAMES A. G., 6033 B Catherine St., Philadelphia, Pa.	1901
RENSHAW, Miss MARY H., 2005 St. Charles Ave., New Orleans, La.	1913
REYNOLDS, THEO. E. W., R. F. D. 2, Box 92, Kent, Wash.	1912
RHOADS, CHARLES J., National Reserve Bank, Philadelphia, Pa.	1895
RICE, JAMES HENRY, Jr., Summerville, S. C.	1910
RICE, WARD J., Roachdale, Ind.	1913
RICHARDS, Miss HARRIET E., 36 Longwood Ave., Brookline, Mass.	1900
RICHARDSON, WYMAN, 50 Claverly Hall, Cambridge, Mass.	1912
RIDEOUT, Miss A. LILLIAN, 15 Farragut Rd., Swampscott, Mass.	1912
RIDGWAY, JOHN L., Chevy Chase, Md.	1890
RICKETSON, WALTON, 10 Anthony St., New Bedford, Mass.	1913
RIKER, CLARENCE B., 43 Scotland Rd., South Orange, N. J.	1885
RING, CLARK L., Saginaw, Mich.	1912
RIPLEY, CHAS., 173 Harvard St., Dorchester Center, Boston, Mass.	1912
RIPLEY, Mrs. J. W., 67 Greenleaf St., Malden, Mass.	1912
ROBBINS, Miss ALMEDA B., Y. M. Library Association, Ware, Mass.	1910
ROBBINS, C. A., Onset, Mass.	1914
ROBERTS, JAMES O., 821 Genesee St., Utica, N. Y.	1912
ROBERTS, WILLIAM ELY, 5513 Irving St., Philadelphia, Pa.	1902
ROBERTSON, HOWARD, 157 S. Wilton Drive, Los Angeles, Cal.	1911
ROBINSON, ANTHONY W., 401 Chestnut St., Philadelphia, Pa.	1903
ROCKWOOD, Mrs. GEO. I., 340 May St., Worcester, Mass.	1912
ROE, CHAS. M., 3012 Bathgate St., Cincinnati, O.	1906
*ROGERS, CHARLES H., Amer. Mus. Nat. Hist., New York City	1904
ROOSEVELT, FRANKLIN DELANO, Hyde Park, N. Y.	1896
ROPER, KENYON, 509 N. 4th St., Steubenville, Ohio	1911
ROSS, GEORGE H., 23 West St., Rutland, Vt.	1904
ROSS, Dr. LUCRETIOUS H., 507 Main St., Bennington, Vt.	1912
ROWLEY, JOHN, 42 Plaza Drive, Berkeley, Cal.	1889
RUGG, H. G., Hanover, N. H.	1913
SACKETT, CLARENCE, Rye, N. Y.	1910
SAGE, HENRY M., Menands Road, Albany, N. Y.	1885
SANBORN, COLIN C., 224 East Park Ave., Highland Park, Ill.	1911
SAUNDERS, ARETAS A., West Haven, Conn.	1907
SAVAGE, JAMES, 1097 Ellicott Sq., Buffalo, N. Y.	1895
SAVAGE, WALTER GILES, Amity, Ark.	1898
SCHANTZ, ORPHEUS M., 5215 W. 24th St., Cicero, Ill.	1907
SCHENCK, FREDRIC, 52 Brattle St., Cambridge, Mass.	1912
SCHORGER, A. W., Forest Products Laboratory, Madison, Wis.	1913

*Life Associate.

SCOTT, WILLIAM G., Box 1954, Winnipeg, Man., Canada	1913
SHANNON, WM. PURDY, 1170 Broadway, New York City	1908
SHARPLES, ROBERT P., West Chester, Pa.	1907
SHAW, CHAS. F., 676 Bedford St., North Abington, Mass.	1912
SHAW, DR. J. HOLBROOK, 43 Court St., Plymouth, Mass.	1912
SHAW, WILLIAM T., 600 Linden Ave., Pullman, Wash.	1908
SHEARER, AMON R., Mont Belvieu, Tex.	1905
SHELDON, CHARLES, 8 W. 9th St., New York City	1911
SHELTON, ALFRED, Univ. of Ore., Eugene, Ore.	1911
SHIRAS, GEORGE, 3d, Stoneleigh Court, Washington, D. C.	1907
SHOEMAKER, CLARENCE R., 3116 P St., Washington, D. C.	1910
SHOEMAKER, HENRY W., 26 W. 53d St., New York City	1912
SHROSBREE, GEORGE, Public Museum, Milwaukee, Wis.	1899
SILLIMAN, HARPER, 126 E. 22d St., New York City	1902
SIMMONS, GEO. FINLAY, 622 First National Bank, Houston, Texas. .	1910
SLADE, MRS. DANIEL D., Chestnut Hill, Mass.	1912
SMITH, AUSTIN PAUL, 742 Pennsylvania Ave., San Antonio, Texas. .	1911
SMITH, BYRON L., 2140 Prairie Ave., Chicago, Ill.	1906
SMITH, MISS ETHEL M., Rome, Ohio.	1910
SMITH, REV. FRANCIS CURTIS, 812 Columbia St., Utica, N. Y.	1903
SMITH, PROF. FRANK, 913 West California Ave., Urbana, Ill.	1909
SMITH, HORACE G., State Museum, State House, Denver, Colo.	1888
SMITH, DR. HUGH M., 1209 M St. N. W., Washington, D. C.	1886
SMITH, LOUIS IRVIN, JR., 3908 Chestnut St., Philadelphia, Pa.	1901
SMITH, WILBUR F., South Norwalk, Conn.	1909
SMYTH, PROF. ELLISON A., JR., Polytechnic Inst., Blacksburg, Va. .	1892
SNYDER, WILL EDWIN, 309 De Clark St., Beaver Dam, Wis.	1895
SOUTHER, ARTHUR L., 38 Pleasant St., Stoneham, Mass.	1913
SPEARS, MISS ETHEL D., 115 East 69th St., New York City	1913
SPEENBURGH, D. C., 200 W. 95th St., New York City	1913
SPELMAN, HENRY M., 48 Brewster St., Cambridge, Mass.	1911
SPOONER, MISS M. T., 381 Commonwealth Ave., Boston, Mass.	1913
STANSELL, S. S. S., Manly, Alberta, Canada.	1913
STANTON, PROF. J. Y., 410 Main St., Lewiston, Me.	1883
STANWOOD, MISS CORDELIA JOHNSON, Ellsworth, Me.	1909
STEARNS, GEO. CUSHMAN, 494 Washington St., Dedham, Mass.	1913
STEPHENS, T. C., Morningside College, Sioux City, Iowa.	1909
STEVENS, FRANK E., 25 Hudson St., Somerville, Mass.	1912
STEVENS, DR. J. F., Box 546, Lincoln, Neb.	1908
STILES, EDGAR C., 345 Main St., West Haven, Conn.	1907
ST. JOHN, EDWARD PORTER, 57 Farmington Ave., Hartford, Conn. .	1911
STOCKBRIDGE, CHAS. A., Fort Wayne, Ind.	1911
STODDARD, HERBERT LEE, Field Museum Nat. Hist., Chicago, Ill. .	1912
STONE, CLARENCE F., Branchport, N. Y.	1903
STONE, H. F., Lawrence, N. Y.	1913
STONE, WM. D., Fayetteville, Ark.	1911

STOVER, ALLAN J., Kings Rd., R. F. D. 3, Corvallis, Ore.	1912
STRATER, FRANCIS A., 50 Sumner Rd., Brookline, Mass.	1912
STRATTON-PORTER, MRS. GENE, Box 855, Rome City, Ind.	1906
STREET, J. FLETCHER, Beverly, N. J.	1908
STRODE, DR. W. S., Lewiston, Ill.	1911
STUART, GEO. H., 3rd, care of Girard Trust Co., Philadelphia, Pa.	1913
STURGIS, S. WARREN, Groton, Mass.	1910
STURTEVANT, EDWARD, St. George's School, Newport, R. I.	1896
STYER, MRS. KATHARINE R., Concordville, Pa.	1903
SUGDEN, ARTHUR W., 52 Highland St., Hartford, Conn.	1913
SUMMERS, JOHN N., 17 E. Highland Ave., Melrose Highlands, Mass.	1912
SURFACE, HARVEY ADAM, State Zoölogist, Harrisburg, Pa.	1897
SWAIN, JOHN MERTON, Box 633, Farmington, Me.	1899
SWENK, MYRON H., 3028 Starr Street, Lincoln, Neb.	1904
TATE, C. W., 19 Norman St., East Orange, N. J.	1914
TAYLOR, ALEXANDER R., 1410 Washington St., Columbia, S. C.	1907
TAYLOR, B. F., 1619 Green St., Columbia, S. C.	1911
TAYLOR, LIONEL E., Kelouna, British Columbia	1913
TERRILL, LEWIS McI., 53 Stanley Ave., St. Lambert, Quebec.	1907
THOMAS, MISS EMILY HINDS, 2000 Spruce St., Philadelphia, Pa.	1901
THOMPSON, CHAS. S., 1712 S. Grand Ave., San Pedro, Cal.	1909
THORNE, SAMUEL, 19 Cedar St., New York City	1908
THURSTON, HENRY, Box 181, Floral Park, N. Y.	1912
TILLEY, GEO. D., Darien, Conn.	1910
TINKER, ALMERIN D., 631 S. 12th St., Ann Arbor, Mich.	1907
TOPPAN, GEORGE L., care of Col. C. Pfaff, Framingham, Mass.	1886
TOURTELLOTTE, A. J., 114 East Main St., Westboro, Mass.	1913
TOWER, MRS. KATE DENIG, 9 Newbury St., Boston, Mass.	1908
TOWNSEND, WILMOT, 334 80th St., Brooklyn, N. Y.	1894
TREGANZA, A. O., 614 E. 6th St., Salt Lake City, Utah.	1906
TRIPPE, THOMAS M., Howardsville, Colo.	1909
TROTTER, WILLIAM HENRY, 36 N. Front St., Philadelphia, Pa.	1899
TRUMBULL, J. H., Plainville, Conn.	1907
TUDBURY, WARREN C., 441 Consolidated Realty Bldg., Los Angeles, Cal.	1903
TUFTS, LE ROY MELVILLE, Thrushwood, Farmington, Me.	1903
TUFTS, MISS MARY I., 1 Atlantic St., Lynn, Mass.	1910
TUTTLE, DR. ALBERT H., 1069 Boylston St., Boston, Mass.	1908
TUTTLE, HENRY EMERSON, 253 Yale Station, New Haven, Conn.	1909
TWEEDY, EDGAR, 404 Main St., Danbury, Conn.	1902
TYLER, JOHN G., 1114 Belmont Ave., Fresno, Cal.	1912
TYLER, DR. WINSOR M., 522 Massachusetts Ave., Lexington, Mass.	1912
UNDERWOOD, WILLIAM LYMAN, Mass Inst. Technology, Boston, Mass.	1900
UPHAM, A. W., 77 St. Botolph St., Boston, Mass.	1914
VALENTINE, MISS ANNA J., Bellefonte, Pa.	1905
VAN CORTLANDT, MISS ANNE S., Croton-on-Hudson, N. Y.	1885

VAN NAME, WILLARD GIBBS, N. Y. State Museum, Albany, N. Y.	1900
VAN SANT, MISS ELIZABETH, 2960 Dewey Ave., Omaha, Neb.	1896
VANTASSELL, F. L., 116 High St., Passaic, N. J.	1907
VETTER, DR. CHARLES, 2 West 88th St., New York City.	1898
VIETOR, DR. EDWARD W., 166 St. James Place, Brooklyn, N. Y.	1911
VIETOR, MRS. EDWARD W., 166 St. James Place, Brooklyn, N. Y.	1914
VISHER, STEPHEN S., 5725 Drexel Ave., Chicago, Ill.	1904
VROOMAN, ISAAC H., Jr., 294 Hamilton St., Albany, N. Y.	1908
WADLEIGH, WM. G., 219 State St., Boston, Mass.	1913
WADSWORTH, CLARENCE S., 37 Washington St., Middletown, Conn.	1906
WALCOTT, FREDERIC COLLINS, 14 Wall St., New York City.	1913
WAITE, MRS. J. GILMAN, 19 Pearl St., Medford, Mass.	1912
WALES, EDWARD H., Hyde Park, N. Y.	1896
WALKER, ALEXANDER, Hemlock, Ore.	1913
WALKER, ERNEST P., Fisheries Service, Wrangell, Alaska.	1911
WALKER, GEO. R., R. F. D. 3, Murray, Utah.	1909
WALKER, DR. R. L., 355 Main Ave., Carnegie, Pa.	1888
WALLACE, CHAS. R., 69 Columbus Ave., Delaware, Ohio.	1913
WALLACE, JAMES S., 533 Front St., E., Toronto, Ontario.	1907
WALTER, DR. HERBERT E., 53 Arlington Ave., Providence, R. I.	1901
WALTERS, FRANK, 40 West Ave., Great Barrington, Mass.	1902
WARD, FRANK HAWLEY, 18 Grove Place, Rochester, N. Y.	1908
WARD, HENRY L., 882 Hackett Ave., Milwaukee, Wis.	1906
WARD, MRS. MARTHA E., 25 Arlington St., Lynn, Mass.	1909
WARNER, EDWARD P., Concord, Mass.	1910
WARNER, GOODWIN, Concord Junction, Mass.	1908
WARNER, WILLIS H., R. F. D. 2, Canfield, Ohio.	1913
WATSON, MRS. ALEX M., 124 Hatton St., Portsmouth, Va.	1910
WEBER, J. A., Palisades Park, N. J.	1907
WEIR, J. ALDEN, 471 Park Ave., New York City.	1899
WELLMAN, GORDON B., 54 Beltran St., Malden, Mass.	1908
WENTWORTH, IRVING H., 245 Belden Ave., San Antonio, Texas.	1900
WESTON, FRANCIS M., Jr., Bureau of Lighthouses, Washington, D. C.	1913
WETMORE, MRS. EDMUND, 125 E. 57th St., New York City.	1902
WEYGANDT, DR. CORNELIUS, Wissahickon Ave., Mt. Airy, Philadel- phia, Pa.	1907
WHARTON, WILLIAM P., Groton, Mass.	1907
WHEELER, EDMUND JACOB, 177 Pequot Ave., New London, Conn.	1898
WHEELER, HARVEY, Elm St., Concord, Mass.	1912
WHEELLOCK, MRS. IRENE G., 1040 Hinman Ave., Evanston, Ill.	1902
WHITCOMB, MYRON L., 40 Westland Terrace, Haverhill, Mass.	1912
WHITE, FRANCIS BEACH, St. Paul's School, Concord, N. H.	1891
WHITE, GEORGE R., Dead Letter Office, Ottawa, Ontario.	1903
WHITE, DR. JAMES C., 259 Marlborough St., Boston, Mass.	1913
WHITE, W. A., 158 Columbia Heights, Brooklyn, N. Y.	1902
WHITE, W. C., Chester, S. C.	1911

WICKERSHAM, CORNELIUS W., Cedarhurst, N. Y.....	1902
WILBUR, ADDISON P., 60 Gibson St., Canandaigua, N. Y.....	1895
WILCOX, T. FERDINAND, 162 W. 54th St., New York City.....	1895
WILLARD, BERTEL G., 8 Everett St., Cambridge, Mass.....	1906
WILLARD, FRANK C., Tombstone, Arizona.....	1909
WILLARD, MISS HELEN, 25 Regent Circle, Brookline, Mass.....	1913
WILLCOX, Prof. M. A., 63 Oakwood Road, Newtonville, Mass.....	1913
WILLIAMS, ROBERT S., New York Botanical Gardens, Bronx Park, New York City.....	1888
WILLIAMS, ROBERT W., Jr., Tallahassee, Fla.....	1900
WILLIAMSON, E. B., Bluffton, Ind.....	1900
WILLISTON, MRS. SAMUEL, 577 Belmont St., Belmont, Mass.....	1911
WINDLE, FRANCIS, 253 Dean St., West Chester, Pa.....	1909
WING, DEWITT C., 5401 Dorchester Ave., Chicago, Ill.....	1913
WINSLOW, ARTHUR M., 3 Lyford St., Worcester, Mass.....	1912
WOOD, MRS. GEO., 1313 Spruce St., Philadelphia, Pa.....	1910
WOOD, J. CLAIRE, 179 17th St., Detroit, Mich.....	1902
WOOD, NELSON R., Smithsonian Institution, Washington, D. C.....	1895
WOODRUFF, FRANK M., 225 Wisconsin St., Chicago, Ill.....	1904
WOODRUFF, LEWIS B., 24 Broad St., New York City.....	1886
WORCESTER, MRS. ALFRED, Bacon St., Waltham, Mass.....	1908
WRIGHT, ALBERT H., 707 E. State St., Ithaca, N. Y.....	1906
WRIGHT, MISS HARRIET H., 1637 Gratiot Ave., Saginaw, W. S., Mich.....	1907
WRIGHT, HORACE WINSLOW, 107 Pinckney St., Boston, Mass.....	1902
WRIGHT, SAMUEL, Conshohocken, Pa.....	1895
WYMAN, LUTHER E., 4911 Bridlong Ave., Los Angeles, Cal.....	1907
YOUNG, JOHN P., 1510 5th Ave., Youngstown, Ohio.....	1911
YOUNG, WALLACE PARK, 73 Soramen Ave., Toronto, Canada.....	1913
ZAPPEY, WALTER R., 25 Hammond St., Cambridge, Mass.....	1905
ZIMMER, J. T., 42 Holdrege St., Lincoln, Neb.....	1908

DECEASED MEMBERS.*

FELLOWS.

	<i>Date of Death</i>
ALDRICH, CHARLES.....	March 8, 1908
BAIRD, SPENCER FULLERTON.....	Aug. 19, 1887
BENDIRE, CHARLES EMIL.....	Feb. 4, 1897
COUES, ELLIOTT.....	Dec. 25, 1899
GOSS, NATHANIEL STICKNEY.....	March 10, 1891
HOLDER, JOSEPH BASSETT.....	Feb. 28, 1888
JEFFRIES, JOHN AMORY.....	March 26, 1892
McILWRAITH, THOMAS.....	Jan. 31, 1903
MERRILL, JAMES CUSHING.....	Oct. 27, 1902
PURDIE, HENRY AUGUSTUS.....	March 29, 1911
SENNETT, GEORGE BURRITT.....	March 18, 1900
TRUMBULL, GURDON.....	Dec. 28, 1903
WHEATON, JOHN MAYNARD.....	Jan. 28, 1887

RETIRED FELLOWS.

GILL, THEODORE NICHOLAS.....	Sept. 25, 1914
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HONORARY FELLOWS.

BLANFORD, WILLIAM THOMAS.....	June 23, 1905
BARBOZA DU BOCAGE, JOSÉ VICENTE.....	July —, 1908
BURMEISTER, KARL HERMANN KONRAD.....	May 1, 1891
CABANIS, JEAN LOUIS.....	Feb. 20, 1906
GÄTKE, HEINRICH.....	Jan. 1, 1897
GIGLIOLI, ENRICO HILLYER.....	Dec. 16, 1909
GUNDLACH, JOHANN CHRISTOPH.....	March 14, 1896
GURNEY, JOHN HENRY.....	April 20, 1890
HARTLAUB, [KARL JOHANN] GUSTAV.....	Nov. 20, 1900
HUME, ALLAN OCTAVIAN.....	July 31, 1912
HUXLEY, THOMAS HENRY.....	June 29, 1895
KRAUS, FERDINAND.....	Sept. 15, 1890
LAWRENCE, GEORGE NEWBOLD.....	Jan. 17, 1895
MEYER, ADOLF BERNHARD.....	Feb. 5, 1911
MILNE-EDWARDS, ALPHONSE.....	April 21, 1900
NEWTON, ALFRED.....	June 7, 1907

* List revised by Dr. T. S. Palmer from data collected by the Index Committee.

Deceased Members.

xxxv

PARKER, WILLIAM KITCHEN.....	July 3, 1890
PELZELN, AUGUST VON.....	Sept. 2, 1891
SALVIN, OSBERT.....	June 1, 1898
SAUNDERS, HOWARD.....	Oct. 20, 1907
SCHLEGEL, HERMANN.....	Jan. 17, 1884
SCLATER, PHILIP LUTLEY.....	June 27, 1913
SEEBOHM, HENRY.....	Nov. 26, 1895
SHARPE, RICHARD BOWDLER.....	Dec. 25, 1909
TACZANOWSKI, LADISLAS [CASIMIROVICH].....	Jan. 17, 1890
WALLACE, ALFRED RUSSEL.....	Nov. 7, 1913

CORRESPONDING FELLOWS.

ALTUM, [C. A. =] BERNARD.....	Feb. 1, 1900
ANDERSON, JOHN.....	Aug. 15, 1900
BALDAMUS, AUGUSTE KARL EDUARD.....	Oct. 30, 1893
BLAKISTON, THOMAS WRIGHT.....	Oct. 15, 1891
BLASIUS, [PAUL HEINRICH] RUDOLPH.....	Sept. 21, 1907
BLASIUS, WILHELM AUGUST HEINRICH.....	May 31, 1912
BOGDANOW, MODEST NIKOLAEVICH.....	March 16, 1888
BRYANT, WALTER [PIERC]E.....	May 21, 1905
BULLER, WALTER LAWRY.....	July 19, 1906
COLLETT, ROBERT.....	Jan. 27, 1913
COOPER, JAMES GRAHAM.....	July 19, 1902
CORDEAUX, JOHN.....	Aug. 1, 1899
DAVID, ARMAND.....	Nov. 10, 1900
DUGÈS, ALFRED.....	Jan. 7, 1910
FATIO, VICTOR.....	March 19, 1906
HAAST, JULIUS VON.....	Aug. 16, 1887
HARGITT, EDWARD.....	March 19, 1895
HAYEK, GUSTAV EDLER VON.....	Jan. 9, 1911
HERMAN, OTTO.....	Dec. 27, 1914
HOLUB, EMIL.....	Feb. 21, 1902
HOMEYER, EUGEN FERDINAND VON.....	May 31, 1889
KNUDSEN, VALDEMAR.....	Jan. 8, 1898
LAYARD, EDGAR LEOPOLD.....	Jan. 1, 1900
LEVERKÜHN, PAUL.....	Dec. 5, 1905
LILFORD, LORD (THOMAS LYTLETON POWYS).....	June 17, 1896
MARSCHALL, AUGUST FRIEDRICH.....	Oct. 11, 1887
MALMGREN, ANDERS JOHAN.....	April 12, 1897
MIDDENDORFF, ALEXANDER THEODOROVICH.....	Jan. 28, 1894
MOSJISOVICS VON MOJSVAR, FELIX GEORG HERMANN AUGUST.....	Aug. 27, 1897
OATES, EUGENE WILLIAM.....	Nov. 16, 1911
OUSTALET, [JEAN FRÉDÉRIC] ÉMILE.....	Oct. 23, 1905

PHILIPPI, RUDOLF AMANDUS.....	July 23, 1904
PRJEVALSKY, NICOLAS MICHAELOVICH.....	Nov. 1, 1888
PRENTISS, DANIEL WEBSTER.....	Nov. 19, 1899
PRYER, HARRY JAMES STOVIN.....	Feb. 17, 1888
RADDE, GUSTAV FERDINAND RICHARD VON.....	March 15, 1903
SCHRENCK, LEOPOLD VON.....	Jan. 20, 1894
SÉLYS-LONGCHAMPS, MICHEL EDMOND DE.....	Dec. 11, 1900
SEVERTZOW, NICOLAS ALEKSTEVICH.....	Feb. 8, 1885
SHELLEY, GEORGE ERNEST.....	Nov. 29, 1910
STEVENSON, HENRY.....	Aug. 18, 1888
TRISTRAM, HENRY BAKER.....	March 8, 1906
WHARTON, HENRY THORNTON.....	Sept. —, 1895
WOODHOUSE, SAMUEL WASHINGTON.....	Oct. 23, 1904
HERMAN, OTTO.....	Dec. 27, 1914

MEMBERS.

BROWN, HERBERT.....	May 12, 1913
FANNIN, JOHN.....	June 20, 1904
HARDY, MANLY.....	Dec. 9, 1910
JUDD, SYLVESTER DWIGHT.....	Oct. 22, 1905
KNIGHT, ORA WILLIS.....	Nov. 11, 1913
PENNOCK, CHARLES JOHN (disappeared).....	May 15, 1913
RALPH, WILLIAM LeGRANGE.....	July 8, 1907
TORREY, BRADFORD.....	Oct. 7, 1912
WHITMAN, CHARLES OTIS.....	Dec. 6, 1910

ASSOCIATES.

ADAMS, CHARLES FRANCIS.....	May 20, 1893
ALLEN, CHARLES SLOVER.....	Oct. 15, 1893
ANTES, FRANK TALLANT.....	Feb. 6, 1907
ATKINS, HARMON ALBRO.....	May 19, 1885
AVERY, WILLIAM CUSHMAN.....	March 11, 1894
BAILEY, CHARLES E.....	—, 1905
BAIRD, LUCY HUNTER.....	June 19, 1913
BARLOW, CHESTER.....	Nov. 6, 1902
BAUR, GEORG [HERMANN CARL LUDWIG].....	June 25, 1898
BECKHAM, CHARLES WICKLIFFE.....	June 8, 1888
BILL, CHARLES.....	April 14, 1897
BIRTWELL, FRANCIS JOSEPH.....	June 28, 1901
BOARDMAN, GEORGE AUGUSTUS.....	Jan. 11, 1901
BOLLES, FRANK.....	Jan. 10, 1894

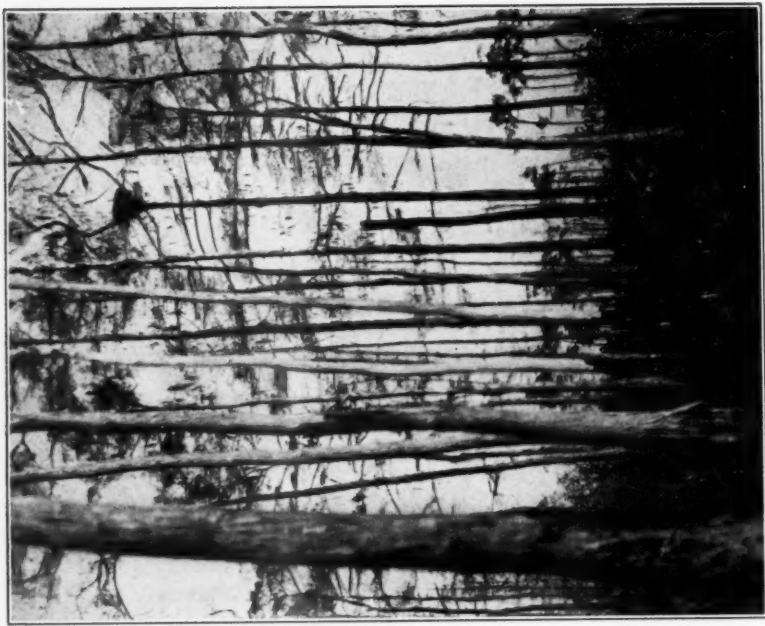
BRACKETT, FOSTER HODGES.....	Jan. 5, 1900
BRANTLEY, WILLIAM FOREACRE.....	Sept. 9, 1914
BREESE, WILLIAM LAWRENCE.....	Dec. 7, 1888
BRENINGER, GEORGE FRANK.....	Dec. 3, 1905
BRENNAN, CHARLES F.....	Mar. 21, 1907
BROKAW, LOUIS WESTEN.....	Sept. 3, 1897
BROWN, JOHN CLIFFORD.....	Jan. 16, 1901
BROWNE, FRANCIS CHARLES.....	Jan. 9, 1900
BROWNSON, WILLIAM HENRY.....	Sept. 6, 1909
BURKE, WILLIAM BARDWELL.....	April 15, 1914
BURNETT, LEONARD ELMER.....	March 16, 1904
BUTLER, [THOMAS] JEFFERSON.....	Oct. 23, 1913
CAIRNS, JOHN SIMPSON.....	June 10, 1895
CALL, AUBREY BRENDON.....	Nov. 20, 1901
CAMPBELL, ROBERT ARGYLL.....	April —, 1897
CANFIELD, JOSEPH BUCKINGHAM.....	Feb. 18, 1904
CARLETON, CYRUS.....	Nov. 15, 1907
CARTER, EDWIN.....	Feb. 3, 1900
CARTER, ISABEL MONTEITH PADDOCK (Mrs. CARTER).....	Sept. 15, 1907
CHADBOURNE, ETHEL RICHARDSON (Mrs. ARTHUR PATTERSON CHADBOURNE).....	Oct. 4, 1908
CHARLES, FRED LEMAR.....	May 6, 1911
CLARK, JOHN NATHANIEL.....	Jan. 13, 1903
COE, WILLIAM WELLINGTON.....	April 26, 1885
COLBURN, WILLIAM WALLACE.....	Oct. 17, 1899
COLLETT, [COLLETTE] ALONZO MCGEE.....	Aug. 22, 1902
CONANT, MARTHA WILSON (Mrs. THOMAS OAKES CONANT).....	Dec. 28, 1907
CORNING, ERASTUS, JR.....	April 8, 1893
DAFFIN, WILLIAM H.....	April 21, 1902
DAKIN, JOHN ALLEN.....	Feb. 21, 1900
DAVIS, SUSAN LOUISE (Mrs. WALTER ROCKWOOD DAVIS).....	Feb. 13, 1913
DAVIS, WALTER ROCKWOOD.....	April 3, 1907
DEXTER, [SIMON] NEWTON.....	July 27, 1901
DODGE, JULIAN MONTGOMERY.....	Nov. 23, 1909
DYCHE, LEWIS LINDSAY.....	Jan. 20, 1915
ELLIOTT, SAMUEL LOWELL.....	Feb. 11, 1889
FAIRBANKS, FRANKLIN.....	April 24, 1895
FARWELL, Mrs. ELLEN SHELDON DRUMMOND.....	Aug. 6, 1912
FERRY, JOHN FARWELL.....	Feb. 11, 1910
FISHER, WILLIAM HUBBELL.....	Oct. 6, 1909
FOWLER, JOSHUA LOUNSBURY.....	July 11, 1899
FULLER, CHARLES ANTHONY.....	Mar. 16, 1906
GESNER, ABRAHAM HERBERT.....	April 30, 1895
GOSS, BENJAMIN FRANKLIN.....	July 6, 1893
HALES, HENRY TEASDEL.....	Nov. 6, 1913
HATCH, JESSE MAURICE.....	May 1, 1898

HILL, WILLIAM HENRY.....	Oct. 14, 1913
HOADLEY, FREDERICK HODGES.....	Feb. 26, 1895
HOLMES, LARUE KLINGLE.....	May 10, 1906
HOOPES, JOSIAH.....	Jan. 16, 1904
HOWE, FLORENCE AURELLA.....	July 9, 1913
HOWE, LOUISE.....	Sept. 13, 1912
HOWLAND, JOHN SNOWDEN.....	Sept. 19, 1885
INGERSOLL, JOSEPH CARLETON.....	Oct. 1, 1897
JENKS, JOHN WHIPPLE POTTER.....	Sept. 26, 1894
JESURUN, MORTIMER (disappeared).....	Feb. 19, 1905
JOUY, PIERRE LOUIS.....	March 22, 1894
KELKER, WILLIAM ANTHONY.....	Feb. 15, 1908
KNIGHT, WILBER CLINTON.....	July 28, 1903
KNOX, JOHN COWING.....	June 10, 1904
KOCH, AUGUST.....	Feb. 15, 1907
KUMLIEN, LUDWIG.....	Dec. 4, 1902
KUMLIEN, THURE LUDWIG THEODOR.....	Aug. 5, 1888
LAWRENCE, ROBERT HOE.....	April 27, 1897
LEE, LESLIE ALEXANDER.....	May 20, 1908
LEVY, WILLIAM CHARLESWORTH.....	July 5, 1914
LINDEN, CHARLES.....	Feb. 3, 1888
LLOYD, ANDREW JAMES.....	June 14, 1906
MABBETT, GIDEON.....	Aug. 15, 1890
MAITLAND, ALEXANDER.....	Oct. 25, 1907
MARBLE, CHARLES CHURCHILL.....	Sept. 10, 1900
MARCY, OLIVER.....	March 19, 1899
MARIS, WILLARD LORRAINE.....	Dec. 11, 1895
MARSDEN, HENRY WARDEN.....	Feb. 26, 1914
McEWEN, DANIEL CHURCH.....	Nov. 1, 1909
McKINLAY, JAMES.....	Nov. 30, 1899
MEAD, GEORGE SMITH.....	June 18, 1901
MINOT, HENRY DAVIS.....	Nov. 13, 1890
MORRELL, CLARENCE HENRY.....	July 15, 1902
NICHOLS, HOWARD GARDNER.....	June 23, 1896
NIMS, LEE.....	March 12, 1903
NORTHROP, JOHN ISALAH.....	June 26, 1891
PARK, AUSTIN FORD.....	Sept. 22, 1893
PAULMIER, FREDERICK CLARK.....	March 4, 1906
POMEROY, GRACE V.....	May 14, 1906
RAGSDALE, GEORGE HENRY.....	March 25, 1895
RAWLE, FRANCIS WILLIAM.....	June 12, 1911
READY, GEORGE HENRY.....	March 20, 1903
REED, CHESTER ALBERT.....	Dec. 16, 1912
RICHARDSON, JENNESS.....	June 24, 1893
ROBINS, JULIA STOCKTON (Mrs. EDWARD ROBINS).....	July 2, 1906
SAND, ISABELLA LOW.....	April 20, 1906

Deceased Members.

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SELOUS, PERCY SHERBORN.....	April 7, 1900
SLATER, JAMES HOWE.....	Feb. 22, 1895
SLEVIN, THOMAS EDWARDS.....	Dec. 23, 1902
SMALL, EDGAR ALBERT.....	April 23, 1884
SMALL, HAROLD WESLEY.....	Mar. 12, 1912
SMITH, CLARENCE ALBERT.....	May 6, 1896
SMITH, RUTH COOK (Mrs. H. A. HAMMOND SMITH).....	Jan. 2, 1912
SNOW, FRANCIS HUNTINGTON.....	Sept. 20, 1908
SOUTHWICK, JAMES MORTIMER.....	June 3, 1904
SPAULDING, FREDERICK BENJAMIN.....	Oct. 22, 1913
STONE, WILLARD HARRISON.....	March 15, 1895
SWEIGER, HELEN BRONSON (Mrs. JACOB L. SWEIGER).....	March 24, 1907
TAYLOR, ALEX. O'DRISCOLL.....	April 10, 1910
THOMPSON, MILLETT TAYLOR.....	Aug. 7, 1907
THORNE, PLATT MARVIN.....	March 16, 1897
THURBER, EUGENE CARLETON.....	Sept. 6, 1896
UPHAM, MARY CORNELIA (Mrs. WILLIAM HENRY UPHAM).....	Nov. 29, 1912
VENNOR, HENRY GEORGE.....	June 8, 1884
WATERS, EDWARD STANLEY.....	Dec. 27, 1902
WELLES, CHARLES SALTER.....	Feb. 24, 1914
WILLARD, SAMUEL WELLS.....	May 24, 1887
WILSON, SIDNEY STEWART.....	Nov. 22, 1911
WISTER, WILLIAM ROTCH.....	Aug. 21, 1911
WOOD, WILLIAM.....	Aug. 9, 1885
WOODRUFF, EDWARD SEYMOUR.....	Jan. 15, 1909
WORTHEN, CHARLES KIMBALL.....	May 27, 1909
YOUNG, CURTIS CLAY.....	July 30, 1902



[1. NEST OF AUDUBON'S CARACARA. 2. NEST OF FLORIDA RED-SHOULDERED HAWK.

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No. 1.

ON THE TRAIL OF THE IVORY-BILL.

BY FREDERIC H. KENNARD.

Plates I-III.

AFTER years of looking forward to a hunting trip in the Florida Big Cypress Swamp, my hopes seemed about to be realized when on the 14th of February, 1914, the teamster, Peter Hogan, started from Fort Myers with our outfit, in a wagon very much like an old-fashioned prairie schooner, hauled by two good looking yoke of oxen; while my guide, Tom Hand, and I were to follow the next day in an automobile; it being our intention to catch up before Peter reached the Big Cypress, and leaving the machine at its edge, go on with him.

The wagon was a stout, broad tired affair, with top like a prairie schooner, and easily held our outfit. We used oxen because, though slow, they could with their spreading toes, pull a wagon through places where horses and mules would be sure to bog down.

Tom and I started the next day soon after daylight, for Immokalee, about thirty-two miles southeast of Fort Myers, running through rather uninteresting open pine woods for almost the entire distance. We bogged down just south of Immokalee, had to cut several trees to use as levers, and finally after building a miniature corduroy road, managed to pry the machine out of the mud and caught up with Peter about eight miles further south, where we camped for the night.

When leaving Fort Myers in the morning, we saw a few Florida Grackles fussing about the orange trees in front of the hotel. A

Mockingbird was warbling from a neighboring telegraph pole, Florida Bluejays were feeding among the palms, and a Loggerhead Shrike was singing somewhere in the grounds. Purple Martins were flying about the water tank at the rear of the hotel, and the omnipresent English Sparrow was yapping among the out-buildings. In the bay back of the house was a bunch of about thirty very tame Lesser Scaup Ducks, close in by the sea wall, while just outside, a couple of big Brown Pelicans were wheeling about in the air, or flopping down into the water; and several gulls and some large terns were flying about.

On our way through the pine woods we saw Turkey Buzzards, of course, and a few Florida Crows, Florida Jays, and Florida Bluejays, Flickers, Pileated, Red-cockaded and Red-bellied Woodpeckers. There were numerous warblers flitting about the tree tops, but in our hurry we only identified the Pine and Myrtle. There were a few sparrows also in the underbrush, which we had no time to identify. We saw Phœbes, Bluebirds, numerous Shrikes, Florida Red-wings, Mourning Doves, and several Kingfishers flying about the sloughs or lakes that we passed in the open places. We saw several large herons, either Ward's or Great Blue, a small flock of Little Blue Herons, about half of which were white, one Louisiana Heron, and in the distance, one large white heron, probably an Egret. There were numbers of Florida Meadowlarks, and after we had passed Immokalee we began to get into the country of the Sandhill Cranes.

About sixteen miles out from Fort Myers we discovered the nest of an Audubon Caracara, placed about thirty-five feet up in the top of a pine, just beside the trail. The nest was a rather bulky affair built of sticks, coarse beneath and finer above, with a depression in the top about four inches deep, lined with weeds, and containing one fresh egg. The birds did not seem to be particularly wild, and at first watched us curiously from a neighboring tree, and later flew off to the edge of an adjoining slough.

Immokalee is a typical little Florida hamlet and consists of a church, several houses, one of which contained a postoffice, a so-called store, and several small orange groves. Its oldest inhabitant, Mr. W. H. Brown, an Englishman who has lived there for forty years trading with the Seminoles, boasted that the town was the highest in Lee County just twenty-one feet above the sea!

The next morning, February 16th, we went on through the pine woods, about seven miles, to the "Rock Spring Crossing" at the edge of the Big Cypress, where we left our automobile in the woods, beneath an extemporized canvas tent. We bogged down twice, en route, and had to wait, both times, for the oxen to catch up and pull the machine out of the mud, a soft marley clay.

The country had been very uninteresting, and comparatively birdless, only a few sparrows and a buzzard or two having been seen, and the tracks of a few turkeys. After caching the auto, and eating a hasty lunch, we took to the swamp, the main "strand" of the Big Cypress, and for four miles plodded, and waded, and cleared the trail of prostrate trees and overhanging boughs that threatened the schooner's superstructure.

On the margin of the swamp and its bordering jungle, we saw a Catbird, a Brown Thrasher, and a few Florida Yellow-throats, but after we got into the swamp itself we saw not a bird until we reached a small cabbage hammock about half a mile from the other side, which was fairly alive with them. Chickadees (I do not know whether they were Carolina or the Florida sub-species), Tufted Titmice, many unidentified warblers, Pileated and Red-bellied Woodpeckers were flying about, while in the waters of the swamp adjoining there waded numbers of Louisiana Herons, Green Herons, Egrets, Wood Ibis, Black-crowned Night Herons, and large herons, either Ward's or Great Blues.

On coming out of the swamp the trail led across a fine large hammock of open pine woods, interspersed with cabbage palms, live-oaks, and an undergrowth of saw-palmettos, dotted here and there with numerous depressions filed with cypress and jungle. Peter and I went ahead looking for a "burn" on which to camp, near water and pasturage, while Tom took my rifle, and soon brought in two turkeys which he had "roosted" in a cypress, near the edge of the swamp.

In choosing a camp site in this country one should usually choose a "burn," or place that has recently been burned over, as otherwise one may return to camp, only to find that it has vanished in smoke.

The natives everywhere in this region; cowboys, alligator hunters, and Indians alike, seem to travel with boxes of matches in their pockets, which they distribute impartially as they ride through

the country, generally in order to make better pasturage for their cattle; but in this particular region where there are no cattle, in order to burn out the thickets and jungle, which would otherwise become impenetrable, and to supply food and convenient hunting grounds for deer and turkey which come out on the "burns" to feed on the fresh young growth.

We stayed here until the 19th, wading the swamps, beating the brush, or exploring the neighboring savannahs; collecting a few birds here and there, and filling our larder with turkeys and venison, both fresh and smoked, but always keeping in mind the main object of the expedition, the Ivory-billed Woodpecker. Pileated Woodpeckers there were in plenty, and I would not even try to guess the number of miles we foolishly traveled after large woodpeckers and strange noises that we thought might perchance emanate from an Ivory-bill. They were always Pileateds.

In the swamps there were herons galore; Ward's, Louisianas, Little Blues, Greens, and Black-crowned Night Herons, Wood Ibis or Flint-heads as they are locally called, bunches of White Ibis, numbers of American Bittern, and an occasional Egret. In the main swamp also were numerous fresh tracks of otter, bear, several large alligators, to say nothing of flocks of little fellows. Along the edges the joyous Carolina Wren was almost always in evidence, while on the hammocks numbers of Florida Quail and Mourning Doves flew up almost from under our feet. Florida Barred Owls were everywhere, and as usual particularly loquacious, and Tom could talk their language better than anyone I ever heard. Turkey Buzzards were always soaring somewhere in sight, particularly when we had meat hung up; and a pair of Florida Sparrow Hawks had a nest in an old pine stub close beside the camp. There were warblers in the tree tops, particularly in the cabbage palms, where they, as well as almost every other bird in the vicinity, seemed to find food among the ripe fruit that hung there. Even the Pileated Woodpeckers fed freely on the berries.

There were turkeys here, singly, in pairs and in flocks; sometimes two or three of them would stampede right through camp while we were sitting there, perhaps skinning one of their relatives; while in the mornings and evenings we could always hear the old gobblers a-gobbling from their chosen perches.

I do not think that throughout the entire trip there was ever a morning in which we could not hear at least two or three gobblers, apparently vying with each other, and everybody else for that matter, as to which could make the most noise. If we had heard a gobbler in the distance and wanted to locate him, all we had to do was to let out a few unearthly hoots, like a very large Barred Owl, and he would invariably reply; and once I remember when Tom, at dusk, had shot a small turkey from the top of a cypress tree, the old gobbler that was sitting unobserved on a nearby pine, let out a series of record breaking gobbles in an apparent effort to outdo the shotgun.

Right here perhaps a brief description of our methods of hunting turkeys may be of interest to those unfamiliar with this much written up subject. Briefly, we either "called," "roosted" or "still hunted" them.

For "calling" or "yelping" we got up in the morning before daylight, and after making our way to a comparatively open space near which we knew some gobbler roosted, we would hide in the brush or behind a tree, and then imitating the call of a hen, coax him down from his perch and up within gun shot. Usually the smaller hollow wing-bone of a turkey hen is used as a "yelper" for this purpose; but Tom could conjure the most coaxing calls out of a piece of grass, a leaf or any thing. At this season of the year very little coaxing is really necessary, and the old gobblers would come in on the run at the slightest provocation.

The hens usually roost in a tall cypress near the edge of the swamp, while the old gobblers, at this season seem exclusive, and prefer to roost alone; usually in some tall pine on the nearby hammock. Then when morning comes, after a few preliminary gobbles when the hens have flown down and begun to feed, the old gobbler comes down and is supposed to pay his respects to each of his consorts, or for that matter any other consort that happens to be near.

When the birds are to be "roosted," if it is a gobbler you are after, it is comparatively easy to locate him by his gobbling. If there is any uncertainty as to his exact direction, gobble, or hoot like an owl, and unless he sees you he will invariably reply. Then work your way carefully in his general direction until you have him

located accurately, and then when it is sufficiently dark, creep up with infinite pains to some spot where you can shoot him in the head. It is hardly believable to one who has not tried to locate him how inconspicuous a very large old gobbler may be while sitting in perfectly plain sight, on the limb of a big old pine. My objection to this method of hunting is that when a large bird like a gobbler, weighing fifteen to eighteen pounds, falls seventy-five feet or so from the top of a tall tree he is likely to damage his plumage by striking the limbs and be ruined as a specimen.

"Still hunting" hardly needs a description further than to say that one must know something of the habits of the birds and their daily haunts, and remember that a turkey's eyes are extremely sharp, and that it can run like a deer. There was one enormous old gobbler that I particularly wanted to bring home to an unbelieving friend of mine, and I laid for him on several occasions. I knew almost exactly where to find him at a certain hour in the afternoon, and would approach this particular hammock as stealthily as possible, only to be rewarded each time by seeing him scoting across the prairie to a neighboring swamp. Once, and only once, I chased him. He never seemed really to hurry and disdained taking to his wings. We named this particular place "the quarter mile run"; and yet I have on several occasions walked almost onto an old gobbler "a-droning" in the middle of the trail.

The turkeys of this region are reputedly the smallest of the Florida subspecies; the hens that we shot weighing from five and three quarters to eight and a half pounds, but old hens, I am told, frequently weigh as much as ten pounds or more and I know of one big one that weighed eleven pounds. The young gobblers that we shot weighed from eight and a half to ten pounds, and I am informed, frequently weigh as much as twelve, or even in extreme cases, fourteen pounds. The old gobblers that we collected on this trip, and we did not kill any very large ones, weighed from fifteen to eighteen pounds, but I know of Big Cypress gobblers that have been weighed by friends of mine whose evidence is unquestionable, that weighed twenty-two, twenty-three, and in one extreme case, twenty-five pounds.

On the afternoon of February 19 we broke camp for a hammock

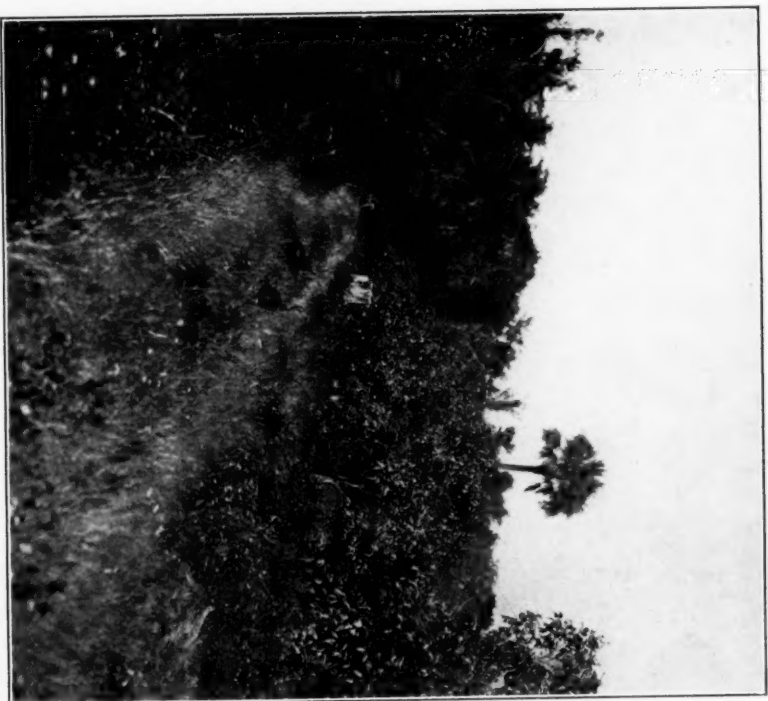
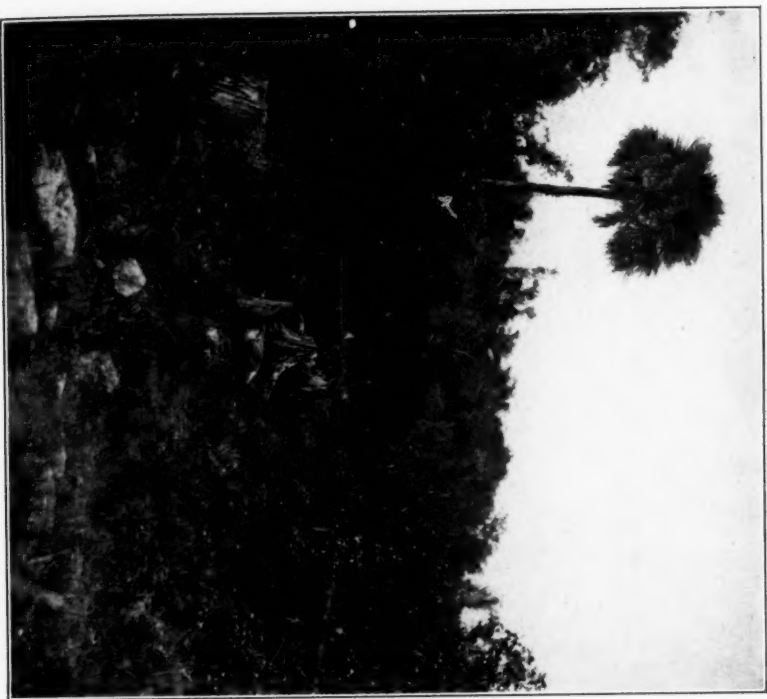


PLATE II.

FLORIDA WILD TURKEYS IN DEEP LAKE GROVE.

1. Gobbler. 2. Hens.



about four miles away, where there was an isolated grove of orange and grapefruit trees belonging to Mr. Frank Van Agnew of Kissimmee, Florida, who had very kindly offered me all the hospitality possible. This grove really was the objective point of our expedition, for it was here in 1908, that a friend of mine had seen Ivory-bills, and had presented me with the skin of a beautiful male as a proof that these rare birds were still to be found in southern Florida. On the trail, which led through a fairly dry and more or less open country, we saw several deer and numerous turkeys, several bunches of Quail, and one Great Crested Flycatcher, besides the usual number of warblers, woodpeckers, etc.

Upon arriving at Van Agnew's, we found, on the edge of the open pine woods, a very comfortable three room bungalow with an open hallway and piazza, built of cypress and set upon posts about six feet above the ground, which at certain seasons of the year is under water. A short distance away, across an open space and a piece of pretty wet cypress swamp, was the hammock, with about ten acres above flood level planted with a very healthy looking grove of trees. Somebody had been there ahead of us and abstracted the oranges. The grapefruit were however still there, the trees loaded with them; and they tasted very good to us after the villainous water that we had been forced to drink for the last few days. Distances are great in Florida and the natives do not think much of them. It has been customary to drag this fruit to market sixty miles by ox team.

I had come on ahead of the rest of the party, and while waiting for them, put in my time exploring the grove. On my entrance a whole flock of turkeys rose just in front of me, lit in some live oaks at the edge of the swamp, and I was lucky enough to knock over two of them with my rifle.

The ground, except for little circles, which had been cultivated immediately about the trees, was waist high with a luxuriant growth of weeds, which were reported to be full of rattlers. The surrounding swamp I knew to be full of moccasins, and the prospect was creepy. There were a few cabbage palms and live oaks scattered through the grove, and about the edge of the clearing was an almost impenetrable jungle of live oaks, underbrush, vines, etc., which gradually merged into the more open cypress swamp

beyond. Even here the going was not any too easy; the cypress trees were very tall and I had an attack of cold feet every time I thought of the job I had before me, if by any chance I should happen to be lucky enough to discover that needle in a haystack, an Ivory-bill's nest, in the top of one of those trees.

We camped here until March 1st, sleeping by preference on the piazza, and out of reach of the elements and things that crawl. Game was plenty, fine water in a cistern by the house, and the ever present grapefruit, with which to assuage our thirst.

The only drawback was the sickness of one of Peter's oxen, which came very near dying, poisoned apparently by something it had eaten; and the loss of which might, we were afraid, seriously handicap our expedition. It seems there is something that grows hereabouts, which if eaten by the cattle is apt to cause them to sicken and die, and which invariably seems to kill the calves. The cattle men have, on this account, not yet invaded this country.

Pigs, too, find it unhealthy, as the bear and panther are apt to make away with them; and a "cracker" has little use for a region that is neither healthy for cattle nor pigs.

The country is too difficult of access for the average sportsman, so that with the exception of a few Seminoles and an occasional alligator hunter or a few "crackers," who are "hiding out," the region is practically uninhabited, and one of the finest natural game preserves I have ever visited.

Deer, turkey and quail abound. Signs of bear were all about us, and some of them big ones too; their tracks where they lumbered through the swamps and the marks where they had sharpened their claws on the cabbage palms, not infrequently helping themselves to the very edible buds thereof. Peter, late one afternoon, found a nest where an old she bear had very recently had her cubs in some brakes on a cabbage hammock in the swamp, about half a mile from camp.

On the 20th we hunted unsuccessfully all day for signs of Ivory-bills, but it was not until the afternoon of the 21st, while Peter and I were off hunting in another part of the swamp, that Tom, who was on the watch in the grove, was lucky enough to discover a female Ivory-bill, which he followed for four or five hours. There was considerable excitement in camp that night, when we all turned up for supper.

The next day, immediately after breakfast, the bird again appeared in the grove and from 8.20 till 8.40 A. M. clung to the side of a cabbage palm about fifteen feet up, and only about fifty feet from where Tom and I were hiding. She simply clung there uttering her call note, often accompanied by an upward and forward movement of her head, and sometimes by a sudden slight movement of her wings.

The note was entirely different from anything I had ever heard, and reminded me of one of those children's toys that one squeezes, or better still a child's tin trumpet, for the note had rather a metallic ring. It was uttered at intervals, averaging about one second apart, though sometimes longer; once, twice, thrice or more in succession. Later in the day when the bird was hitching up the side of a tree, I counted one hundred and seventy-four calls in four minutes.

Audubon says that the note resembles "the false high note of a clarinet," while Wilson describes it thus: "His common note, repeated every three or four seconds, very much resembles the tone of a trumpet or the high note of a clarinet, and can plainly be distinguished at a distance of half a mile, seeming to be immediately at hand; though perhaps more than a hundred yards off. This it utters while mounting along the trunk or digging into it." A good description of the note, and its ventriloquial peculiarities.

At 8.40 A. M. the bird flew north, down into the swamp. Tom followed her through the jungle, while I kept watch in the grove, either for her return or the possible advent of her mate. She fed in the swamp quietly until 9.20, when she again started calling, and kept it up until 9.50 A. M., when she flew off north, further into the swamp, where we lost her. At 11.05 A. M. the bird again appeared at the edge of the jungle, and kept up her calling until 2 P. M., when we went back to camp for lunch. At 3. P. M. we returned, this time accompanied by Peter, and though the three of us spent the rest of the day beating about the swamp, we were unable to find any trace of the bird.

From now on there was always one of us on the watch in the grove for the Ivory-bill; while the other two spent their time cruising the adjoining country. On February 23, at 5.50 A. M. Tom heard a bird call three times from the cypress swamp south-

east of the grove, and a few notes at a time for the next thirty minutes. He did not get sight of the bird, and from then until the morning of March 1st, neither of us saw or heard her again. The male, if there was one, was never seen, though they should have been breeding at this time. We waded through miles of swamp, crawled through miles of jungle, dodging snakes, and devoured by red bugs, our necks stiff from searching the tree tops for possible nests. Pileateds were in abundance, and we found several of their nests, but no Ivory-bills.

The grove itself and its immediate surroundings, were fairly alive with bird life; Mockingbirds, Redbirds, Catbirds, Florida Yellowthroats, Great Crested Flycatchers, and noisiest of them all some Vireos, none of which I collected, but which I suppose were the Key West Vireos. Turkey Buzzards were always soaring somewhere overhead. Florida Red-shouldered Hawks were forever screaming, and even in broad daylight, the hooting of Florida Barred Owls could often be heard. Occasionally a beautiful Swallow-tailed Kite could be seen overhead in swift and graceful flight; and that most characteristic of Florida woodpeckers, the Red-bellied, was always somewhere in hearing. Florida Grackles were wading about the mud in the swamp between the hammock and bungalow, and the croak of White Ibis could be heard deeper in the swamp. Brown-headed Nuthatches and chickadees were in the pine woods about the bungalow, while Tufted Titmice could often be heard in a willow thicket down by the edge of the swamp, and there were colonies of Boat-tailed Grackles in some of the many sloughs.

On February 23 we saw our first Robins, a whole flock of them; and I shot a male Red-headed Woodpecker, which seems to be a rather uncommon bird in this vicinity. Of quail there were many bunches.

On the morning of March 1, after we had become thoroughly disgusted and the sick ox seemed well enough to be led, we broke camp for a pine island five or six miles further south. Just before leaving Tom and I went over to the grove for a last look for the Ivory-bill and incidentally for a few grapefruit. We were picking the fruit, and had our bag almost full when we heard several very loud woodpecker calls, closely resembling the "pump handle" note of the Flicker in the breeding season, and that lone widow



1. PETER HOGAN AND THE 'SCHOONER.'
2. DEEP LAKE, FLORIDA.

"pecker bird" as Tom called her, flew out from the swamp and onto the side of a cabbage palm, only about sixty feet away from me. She joined her mate, if mate he be, in my collection. On dissection her ovaries showed no sign of the breeding season.

We traveled about five miles across a very uninteresting country of scattered "pine islands," "cypress heads," "strands," and broad savannahs, until we came to a rocky "pine island," where we found a poor camping site on a "burn," near a depression in which we scraped a hole for some vile water. We camped here because it was centrally located in a country over which we wished to hunt.

The next day Peter and I, leaving Tom at camp, tramped to Deep Lake about six miles, through more "pine islands" and "cypress strands," across prairies which were still pretty wet and on which we saw a few Killdeer. At Deep Lake there is a hammock with a fine grove of several hundred acres owned by a company, to the superintendent of which Mr. Walter G. Langford of Fort Myers had very kindly given me letters, and in whose care also I had had my mail sent.

Here, while walking through the grove to the superintendent's bungalow, we saw several flocks of turkeys scurrying away across the aisles among the grapefruit trees, and counted over forty hens and one gobbler. These birds, which are here protected, become very tame and can be seen at almost any time from the piazza of the house running about and feeding among the trees of the grove, and the superintendent showed me one old cypress stub just back of the cook's camp where a little earlier in the season about seventy-five turkeys roosted nightly.

Deep Lake is a beautiful little sheet of water entirely surrounded by huge cypress draped with hanging moss. Several alligators were sunning themselves upon the surface. Snake-birds were flying rapidly overhead or perching with the Turkey Buzzards who sat indolently on some of the overhanging boughs, while numbers of Black Buzzards were soaring high above. Florida Gallinules were running or swimming about the edge of the lake, several Swallow-tailed Kites were flying about the nearby grove, Pileated and Red-bellied Woodpeckers seemed everywhere, and Florida Crows and Fish Crows were calling from a neighboring stub.

March 4th all hands were up early, preparing to start north for

Van Agnew's, when to our disgust we discovered that the oxen were missing. This was not an at all uncommon event, and while the men were off hunting them up, Charlie, the Deep Lake colored hunter-cook, wandered into camp with a letter for me, and a yarn to the effect that the teamster at Deep Lake had yesterday seen three Ivory-bills, just south of the grove. While I put no faith in the story, for no one hereabouts seems to know that there are two large species of woodpecker, I thought it best to change my plans, and as soon as the oxen were driven in, traveled south to Deep Lake, where we camped on a hammock just north of the grove. Here we stayed for a week, hunting the region as thoroughly as possible for signs of Ivory-bills, but without success.

On the 7th, I went to Everglade, some fifteen miles south, over a new railroad they were constructing from Everglade to Deep Lake in order to be able to market the thousands of cases of fruit which had heretofore been allowed to rot on the ground. The railroad had already been constructed to within half a mile of the grove and Mr. John M. Roche, the principal owner, very kindly took me over the line on his "private car," a small flat car with a settee tied onto it. The rails were laid on ties of almost any kind of wood, laid flat upon the surface of the prairie, with long trestles over the numerous bog holes, and bridges over the creeks. As we traveled south from Deep Lake the cypress swamps rapidly dwindled both in number and in the size of trees, and gave place gradually to the mangroves, both black and red. The swamp immediately about Deep Lake seeming to mark the southerly boundary of the large cypress.

The southern terminus of the railroad was on the north shore of Allen's Creek, about three quarters of a mile above Everglade, where besides a few scattered houses, there is a postoffice, store and a little hotel, all run by Mr. G. W. Storter.

On March 8th, as we had found no signs of Ivory-bills and as the sick ox seemed considerably better, we yoked up the cattle and as the water had dried up considerably, were able to make the entire twelve miles to Van Agnew's in one day. Nothing of particular interest happened on the road except that I slew a large moccasin, the second largest I have ever seen. He was five feet six inches long, about three and one half inches in diameter, and contained a

recently swallowed snake three feet long and about two inches in diameter, and another partially digested, eighteen inches long, and about one and a quarter inches in diameter.

We stayed at Van Agnew's until the 10th, replenishing our water and grapefruit supplies, hunting turkeys etc., and, of course, always on the outlook for a glimpse of an Ivory-bill.

On March 10th we moved north to our first camping ground in the Big Cypress where we stayed for two days, hunting turkey hens of which we had hitherto secured but few good specimens. We had killed only gobblers at first thinking that we could get the hens at any time, but as the hens were now taking to the woods for their nesting season good specimens had not been so easy to secure.

The next day, while Tom was again hunting hens, Peter and I explored the nearby strand of the big swamp in a last hunt for the elusive Ivory-bill but without success. Red-bellied Woodpeckers were breeding and in the woods only a little way from camp a Pileated Woodpecker was sitting on a nest, about seventy-five feet up in the top of a tall cypress. The nest was evidently very shallow, for the bird, a male, invariably sat with his head out of the window apparently examining the surroundings. One Florida Red-shouldered Hawk's nest that we investigated, contained a day old chick and one pipped egg.

On Friday the 13th of March, we broke camp, and after crossing the main strand of the swamp, in which the waters had now subsided considerably, said goodbye to the Big Cypress and its many attractions.

In my early youth I had had a geography in which was a picture, supposedly of the Big Cypress Swamp, with an Indian magnificently gotten up in war paint, feathers, etc., just stepping into a birch bark canoe from a wooded bank. That picture, which at the time made a great impression on me, might have been fairly accurate except for the fact that the Seminoles neither wear war paint nor feathers, do not build birch bark canoes, and there are no wooded banks in the Big Cypress. The few Indians that we saw were much better dressed than I. Their canoes are long, very graceful dugouts, made from cypress logs.

The region known as the Big Cypress covers a large area, extending in a generally northeasterly direction from near the gulf coast to a point a few miles southeast of Immokalee, and is very different

from those saw-grass areas, known as Everglades, which cover the greater part of southern Florida, and with which it is often confused by northerners. The Big Cypress consists of a series of swamps, the "main strand" with outreaching arms or "strands", and "cypress heads," interspersed with broad savannahs and prairies, with occasional sawgrass sloughs. All of these are under water for several months in the year; and are dotted here and there with small areas, elevated a few feet above the reach of the ordinary floods, known as hammocks, which are covered with a growth of pine, cabbage palm, live oaks, saw palmetto, etc., and to which, in time of flood, the game of the region resorts.

Our trip, so far as Ivory-bills were concerned, had been pretty discouraging. We had secured one specimen, to be sure, but had found no nest, and had learned but little of the bird.

I do not know any better description of the bird's habits than that given by Robert Ridgway in 'The Osprey' for November, 1898, in which he says, "As a result of my three trips to southern Florida, I feel sure that the Ivory-billed Woodpecker is not only a rare, but very local bird in that part of the State, and that it only occurs in large cypress swamps or their immediate vicinity, its true home being within the cypress, and its feeding grounds the cabbage palmetto and live oak hammocks just outside."

"Although a far more powerful bird, the Ivory-billed looks no larger at a distance than the Pileated Woodpecker, but its color, its actions (particularly its manner of flight), and its notes are so totally different that once seen it need never be mistaken for that species, or vice versa. The Pileated Woodpecker is a noisy, active bird, always in evidence from its loud yelping or cackling notes or its restless movements. The Ivory-bill, on the other hand, is comparatively quiet and secluded, and its notes would not attract attention except from one keenly alert for new sounds, being notable for their nasal tone and perfect monotony rather than any other quality." Mr. Ridgway goes on to say that the notes "resemble nothing else so much as the toot of a child's penny trumpet, as described by Wilson, or a false high note on a clarionet as Audubon describes it, repeated three or more times (like pait, pait, pait), with absolute monotony; but instead of being audible for a distance of half a mile as Audubon states, I am sure that those heard by me would have been inaudible beyond half that distance."

LIST OF THE BIRDS OF LOUISIANA. PART VI.

BY H. H. KOPMAN.

THE following list is a continuation of a list of the birds of Louisiana published in 'The Auk' by the present writer and Messrs. Andrew Allison and Geo. E. Beyer in 1906-08.¹ The work of publishing this list was suspended with the appearance of the fifth instalment, which embraced the Pici. Owing to changes in the plans of the several authors of the original list, further co-operation became impractical. The present writer has for some time intended to complete the list, however, and has been prevented by other work from doing so earlier. He is glad to present now what he believes are the most important data on the species listed. The bulk of this material is obtained from his own notes and those of Mr. Andrew Allison, to whom, as well as to Prof. Beyer, credit is given in important specific instances demanding it. The migration records from Ariel, Miss., and Lobdell, La., and most of those from Bay St. Louis and Ellisville, Miss., were established by Mr. Allison, who is now living in China.

186. CHUCK-WILL'S-WIDOW (*Antrostomus carolinensis*). Common summer visitor in the higher parts of the State, especially where there are pines. Very rare in the fertile alluvial section of the southeast, and apparently occurring only as a migrant. Personally I have recorded it there only two or three times in over twenty years of observing. In the sections where it is common it arrives about April 10, usually appearing simultaneously with the Nighthawk. Earliest arrival: Covington, La., Apr. 7, 1901. Calls very little after the middle of July, and is little in evidence after Sept. 1. The latest date for departure is a Mississippi record made by Mr. Andrew Allison: Bay St. Louis, Sept. 25, 1899.

187. WHIP-POOR-WILL (*Antrostomus vociferus vociferus*). A transient only. Rare in the fertile alluvial sections. Fairly common in the higher parts of the State. Usually commonest the latter part of September and early part of October. Data on its movements are limited, and comprised chiefly Mississippi records. Seen by Mr. Andrew Allison at Bay St. Louis, Miss., on Sept. 13, 1899, Oct. 21, 1902, and Apr. 1, 1902. Probably remains in the fall until the early part of November, or may winter rarely.

188. NIGHTHAWK (*Chordeiles virginianus virginianus*). Common transient visitor in most parts of the State. Its occurrence as a breeder in the

¹ 1906, pp. 1-15, 275-282. 1907, pp. 314-321. 1908, pp. 173-180, 439-448.

extreme southeastern portion is, however, limited and local. At New Orleans it is not often seen after the spring migration, and is not conspicuous again until at least the middle of August. During the summer of 1909, however, being often in the commercial section of the city in the evenings, I noticed Nighthawks on numerous occasions, sailing above the taller buildings, the flat roofs of which are usually covered with broken shell, and the probability of the bird using such places to nest occurred to me. The majority of such structures, ten and twelve story office buildings, have been erected in New Orleans within the last decade, and they would furnish more nearly the proper nesting sites for the Nighthawk than any other character of surface in the region about New Orleans.

The Nighthawk arrives in southern Louisiana with remarkable regularity. Out of twenty or more dates of arrival, fully two thirds are April 10-12. The remainder are a day or so earlier or later. In the fall, there is a decided increase of transients after the middle of August. The most remarkable flight I have ever seen was observed near Convent, in St. James parish, about fifty miles above New Orleans on the Mississippi river, on Sept. 11, 1894. The flight was heaviest for the half hour preceding sun-down. The birds kept close to the river and were flying downstream, which at that point was about southeast. The Nighthawk becomes rather inconspicuous after the 20th of September. The last are usually seen in the last week of October, and the latest date of which I have a record is Nov. 3, 1895, at Chef Menteur, La.¹

189. FLORIDA NIGHTHAWK (*Chordeiles virginianus chapmani*). This interesting subspecies has been observed on the shell reefs in the Gulf in the neighborhood of the mouths of the Mississippi which furnish suitable nesting sites. It is also very common in the prairie sections of central southern and southwestern Louisiana. Great numbers may sometimes be seen sailing low or at moderate elevations throughout the day in perfectly clear weather. The same is true of its habits about the Gulf islands.

190. CHIMNEY SWIFT (*Chatura pelagica*). A common summer visitor. On the whole, however, I do not believe it is as abundant as formerly, at least in the immediate vicinity of New Orleans, which is doubtless due largely to changes in the method of construction of flues. The average date of arrival is about March 18 at New Orleans, though several seasons I have failed to see any until about March 25, and once or twice I have noted none up to April 1. The swift usually becomes common the last week in March. Several seasons its appearance became general March 26. The earliest movements of which I have a record occurred in 1897, the first appearing March 13, and the species becoming abundant March 19. The season was well advanced, but in 1911 which was one of the earliest springs I have ever known, practically nothing was seen of the swift until

¹ [According to Mr. H. C. Oberholser's 'Monograph of the Genus *Chordeiles*' the Florida Nighthawk is the breeding bird everywhere in the lower Mississippi Valley north to southwestern Kentucky and extreme southern Illinois. It would seem therefore that all notes on summer resident birds in Louisiana must refer to this form and not to *C. v. virginianus*. ED.]

late in the season. As a matter of fact, an early spring in southern Louisiana, from the standpoint of temperature and progress of vegetation, seldom has a pronounced effect on the course of the migrations.

The Chimney Swift is usually more in evidence after the latter part of June than in the late spring and early summer. Numbers are often seen sailing at a moderate height at this time, as though the more pressing duties of the nesting season had been concluded. The first week in July, 1897, I noticed that during the daytime young swifts began to leave a chimney in which they had been reared. About August 15, the year preceding, I observed the same thing at the same location, and have concluded that a second brood is generally reared as soon as the first comes out. In the case of the young birds observed in August, of course, the first brood must have appeared somewhat earlier than in 1897, but I was not on the ground when the first brood might have been expected. In 1897, on the other hand, I did not observe that a second brood was reared where the first was noted. I think the observations of the two seasons, however, indicate very plainly that with the species as a whole, two broods are commonly reared.

The Chimney Swift is very common in southern Louisiana during the latter part of summer and in the early fall. It is usually common also in the early part of October, and in warm weather after the middle of the month, important flights are often seen. The normal date of departure is Oct. 25-28. The latest date of departure recorded is Nov. 4, 1896.

191. RUBY-THROATED HUMMINGBIRD (*Archilochus colubris*). Commonest as a transient, but in the State as a whole it is a fairly common breeder. I have heard of one or two instances of its being seen in winter. In the southern section of the State it is decidedly uncommon as a breeder. Personally I have seen but two nests, one in a live oak in St. James parish, and the other in an elm in St. Mary parish. The latter was found early in July and contained one fresh egg.

While the Hummingbird usually arrives at the latitude of New Orleans within a day or two of March 20, the movements occasionally show considerable aberration. For instance, in 1897, the first was seen March 7, and on the same date in 1902 at New Iberia, La.; while in the latter year, the first was reported by Mr. Andrew Allison from Bay St. Louis, Miss., on Feb. 20. On the other hand, it is not observed some seasons until after the first of April. It usually becomes common, however, the last week in March. There are several decided transient movements later in the spring, and almost invariably a decided influx for a few days between the 5th and 15th of May. These latter movements are always observed when the weather has become suddenly cooler.

Hummingbirds usually show an increase the latter part of August or early part of September. The last is usually seen about the same time as the Nighthawk and Chimney Swift, that is, the last week of October, or first few days of November.

The Hummingbird is often very conspicuous in September on the Gulf

Coast of Mississippi about the growths of "wild sage" (*Calamintha coccinea*) in the pineries.

192. SCISSOR-TAILED FLYCATCHER (*Muscivora forficata*). The occurrence of this species in Louisiana, with the possible exception of the extreme western portion of the State, is decidedly infrequent, not to say casual. I have never had the good fortune to observe it, and I know of no one who has observed it more than a few times. I have seen a specimen killed near New Orleans in the fall, and I think its occurrence is most apt to be noted at that season. It is doubtless present sometimes as a breeder in the western part of the State.

193. KINGBIRD (*Tyrannus tyrannus*). Common everywhere as a transient in Louisiana, especially in the fall, and common as a breeder in most parts of the State. Coastwise, it is commoner as a breeder in the prairie section of the central southern and southwestern portions of the State than in the wet, wooded alluvial region of the southeast. It is rare as a breeder at New Orleans; in fact, I have few records of its occurrence in the region immediately about the city in the breeding season. At various points within thirty miles to the east, south and west, however, I have found it fairly common in the breeding season on several occasions. It is regularly common as a breeder in extreme southern Louisiana, however, west of the Atchafalaya river.

The Kingbird usually arrives at New Orleans the last week in March, the earliest date of arrival being March 23, 1895 and 1904. While a few doubtless always arrive at this time, its appearance does not become general until April 4 or 5, which is the date when the first are usually seen on the Mississippi coast.

The Kingbird is extremely abundant as a transient in southern Louisiana from about August 25 to Sept. 25. It is seldom seen after Oct. 1. I noted a straggler at Biloxi, Miss., however, on Oct. 23, 1905.

In the piney sections of southeastern Louisiana and southern Mississippi, the Kingbird feeds extensively in the fall on the ripened seeds of the two common native magnolias (*M. fatida* and *M. virginiana*). Wherever it finds the former of these two species transplanted in the wet wooded alluvial section of southeast Louisiana, it occurs in the greatest numbers. This is particularly true in the suburban sections of New Orleans, where *M. fatida* is a favorite shade tree, though not a native of the surrounding woods, or swamps, as commonly supposed.

194. ARKANSAS KINGBIRD (*Tyrannus verticalis*). A specimen of this species taken at Mandeville, La., in September, 1914, is in the Louisiana State Museum. The specimen was taken by the taxidermist of that institution, Mr. George Schneider.

195. CRESTED FLYCATCHER (*Myiarchus crinitus*). There is absolutely nothing exceptional with reference to the occurrence of the Crested Flycatcher in Louisiana so far as I have been able to learn. It is not quite so common in the swampy section of the southeast as in other wooded portions of the State, but wherever there is any considerable growth of

trees, it may be counted upon as a regular breeder. The movements in spring are almost identical with those of the Kingbird. The earliest date of arrival I have recorded is March 25, 1900, at Covington, La. The first has frequently been seen on March 30.

This species becomes very inconspicuous after the middle of August. It departs apparently at the same time as the Kingbird, about the last week in September. The latest recorded date of departure is Oct. 15, 1897, when it was observed by Messrs. Andrew and W. B. Allison at Ariel, Amite county, Miss.

196. *PHOEBE* (*Sayornis phæbe*). A common winter visitor throughout the State. Arrives at the Gulf Coast, Oct. 5 or 6, the movement seldom varying a day from these dates. In 1897, however, I noted one at New Orleans Sept. 25. Departs from the same latitude about April 5 or 6, being as regular at this season as in the fall.

197. *OLIVE-SIDED FLYCATCHER* (*Nuttallornis borealis*). Extremely rare. I have only three records of its occurrence in Louisiana. Mr. H. L. Ballowe took a specimen at Diamond, Plaquemines parish, Aug. 31, 1894. I noted one at Covington, La., Aug. 16, 1903. Mr. Andrew Allison noted one at New Orleans May 6, 1901. In addition, Mr. Allison has noted the species twice at Bay St. Louis, Miss.: On Mar. 31 and Aug. 29, 1902. It will thus be seen that there is a striking agreement in the records for the fall movement, and that like some other species breeding well to the northward, to which attention will be called when they are reached, it moves south very early.

198. *WOOD PEWEE* (*Myiochanes virens*). A common breeder throughout the state. Most abundant, however, as a fall transient, occurring in greatest numbers during the first half of October. A heavy wave during this period always includes large numbers of Wood Pewees.

The normal date of arrival at Gulf coast latitude is about April 5, its appearance is usually general about April 10. Occasionally the first is noted before April 1. In 1904, I saw one at New Orleans on March 30; in 1897, Mr. W. B. Allison saw one at New Orleans on March 27 and in 1906 at Bay St. Louis, Miss., on March 25; in 1901 Mr. Andrews Allison saw one at Bay St. Louis on March 31. On the other hand, I failed to see any at New Iberia, La., in 1902 until April 25, and for two successive seasons none was noted until that date at Ellisville, Miss.

Transient Pewees in fall are brought to Gulf coast latitude by a decided wave that usually reaches there the last week in August. The species is common throughout September, and especially so whenever there is a wave during that month. It is sometimes remarkably abundant during the first important wave in October, usually occurring from the 5th to the 10th. The general transient movement is over by Oct. 20. The latest date for departure at New Orleans is Nov. 2.

[*YELLOW-BELLIED FLYCATCHER* (*Empidonax flaviventris*). While this species undoubtedly occurs as a rare transient in Louisiana, I have never seen it in the State, and do not know of any well authenticated record of its presence.]

199. ACADIAN FLYCATCHER (*Empidonax virescens*). A common summer visitor in swampy woods of every character. It is evenly distributed throughout the wet wooded lands of the fertile alluvial region, and occurs wherever there are river swamps and creek bottoms in other sections. It arrives at New Orleans about April 1. The earliest arrival of which I have a record is March 30, 1904. It becomes common about April 8. It is seen occasionally through most of October. The latest date of departure is Oct. 27, 1900, at Convington.

200. TRAILL'S FLYCATCHER (*Empidonax trailli trailli*).

201. ALDER FLYCATCHER (*Empidonax trailli alnorum*). The similarity of this and the preceding form and the apparently indiscriminate way in which they associate in the lower Mississippi valley make it difficult to distinguish between them in their occurrence and movements. Specimens taken on the Mississippi coast, however, appear to be chiefly if not entirely of the latter of the two forms. Whichever one occurs in the fertile alluvial region of southeast Louisiana, and I am inclined to think it is true *trailli*, is rather rare. It has been noted at New Orleans May 2, and while I believe it has been observed on one or two other occasions, I fail to find any records of these observations. The Alder Flycatcher is rather a common fall transient on the Mississippi coast, where it arrives about Sept. 1. Earliest date of arrival: Aug. 27, 1896, Beauvoir, Miss. Latest date of departure: Oct. 18, 1901, Bay St. Louis, Miss. No records for spring migration.

202. LEAST FLYCATCHER (*Empidonax minimus*). Not particularly common at any points in southern Louisiana and southern Mississippi where I have made observations, and decidedly rare in the fertile alluvial region of southeastern Louisiana. Arrives at Gulf coast latitude the early part of September. Earliest: Sept. 1, 1900, Bay St. Louis, Miss. The only dates on which I have recorded it in spring in Louisiana are April 6, 1895, at New Orleans, and March 30 and May 9, 1902, at New Iberia, La.

203. PRAIRIE HORNED LARK (*Otocoris alpestris praticola*). This is doubtless the form to which reference is had in a list of the birds of Louisiana by Prof. Geo. E. Beyer, who records the fact of a specimen having been taken and a number having been seen by Gustave Kohn along the shore of Lake Pontchartrain near Mandeville on Jan. 6, 1879. I do not know of any other record of the occurrence of this bird in Louisiana.

204. FLORIDA BLUE JAY (*Cyanocitta cristata florincola*). Whether the typical Blue Jay occurs in Louisiana I do not know, but this is undoubtedly the only form present in the southern section of the State. It is not so common in the fertile alluvial region of the southeast as elsewhere, its distribution being somewhat irregular in that section. A rather peculiar feature of its occurrence in this region is the fluctuation of its numbers in the suburban districts of New Orleans. For several years together, it may be rather common there, and then disappears almost entirely for an equally extended period. Thus, while a resident in this region it is evidently rather nomadic. In the prairie section of central southern Louisi-

ana the Blue Jay is common wherever there are groves or patches of woods. In the town of New Iberia, I found it exceedingly numerous in the winter of 1901-02.

205. AMERICAN CROW (*Corvus brachyrhynchos brachyrhynchos*). A resident throughout the State but not quite as common coastwise as the Fish Crow, being confined in that portion of the State, as a rule, to well wooded or cultivated lands. Somewhat commoner coastwise in winter than at other seasons.

206. FISH CROW (*Corvus ossifragus*). Abundant coastwise, apparently not occurring very far inland. It is most abundant in wet, open grounds. Nesting appears to be somewhat later than that of the preceding species, beginning the latter part of March.

207. BOBOLINK (*Dolichonyx oryzivorus*). Appears with considerable regularity in the coast section in fall, especially in the rice fields. Rather rare during most of the spring, but sometimes occurring plentifully for a few days late in the season.

The earliest record for fall arrival is Aug. 22, 1894, at Diamond, Plaquemines parish. It becomes common about Sept. 20. I have no data on the departure of fall transients.

The earliest date of spring arrival is April 4, 1894, at Avery Island, and the latest date of departure is May 2, 1903, at Lobdell, West Baton Rouge parish. Small flocks of transients in song are not unusual about May 1. about cultivated lands in the southeastern part of the State.

208. COWBIRD (*Molothrus ater ater*). Represented in the State by two distinct forms, typical *M. ater*, which in the southern section, at least, is only a winter bird, and a decidedly smaller bird, which I have found in summer in the southern portion of the State, especially to the north and west of New Orleans. This breeding bird is fairly common. The typical *M. ater* occurs rather irregularly in winter, sometimes in good sized flocks, from about the middle of November to the latter part of March. The form breeding in southern Louisiana is an inch or more smaller than typical *M. ater*.

209. YELLOW-HEADED BLACKBIRD (*Xanthocephalus xanthocephalus*). Except in the western portion of the State, where it is said to occur in winter, this species can hardly be considered as more than an accidental visitor.

210. RED-WINGED BLACKBIRD (*Agelaius phoeniceus phoeniceus*).

211. FLORIDA RED-WING (*Agelaius phoeniceus floridanus*). The comparative status of the typical form and the Florida Red-wing as breeders I am unable to define. I know nothing peculiar with reference to the occurrence of this species as a whole in Louisiana. It occurs by myriads in the marshes in summer, and is found in winter in greatest numbers in the swamps and woods, where it occurs in large flocks, often mixed with those of Cowbirds, Grackles and Rusty Blackbirds. Nesting is usually well under way by the latter part of April.

[MEADOWLARK (*Sturnella magna magna*). May occur as a winter visitor in the more northern parts of the State].

212. SOUTHERN MEADOWLARK (*Sturnella magna argutula*). Common resident of the State, but rather irregularly distributed in the fertile region of the southeast. More or less common in that section in the neighborhood of cultivation, especially on the sugar plantations. Even among resident birds there are decided differences in size and coloring. In the Bayou Teche section I have taken some very small, dark-colored birds in summer. These are noticeably different from other specimens taken in winter in the southern part of the State, though I believe that the latter were of the same subspecies and represented a breeding form in some portion of the State if not in the localities where taken.

213. ORCHARD ORIOLE (*Icterus spurius*). The most conspicuous summer visitor in the fertile alluvial section of southeastern Louisiana. Occurs in the greatest profusion in practically all situations except the unbroken swamps, but is most abundant in the vicinity of habitation and cultivation. Is abundant along ditches, bayous, canals, etc., in the open marsh, and on grassy, bushy islands along the coast. Occurs also in greater or less abundance in all other portions of the State in the vicinity of cultivation, but seldom in the forests and swamps.

Its abundance as a breeder in the southeastern portion of the State, however, can scarcely be comprehended by those whose acquaintance with it is confined to its appearance in more northern localities. In one live oak in a plantation yard where there were many more trees of this kind I once counted nearly twenty nests of this species.

The average date of arrival of the male at New Orleans is March 25. The first female arrives usually about April 5, and the male becomes common at the same time. The females become common in a few days. The first male may be either a second-year or a mature bird, but in either case is almost invariably singing.

Nesting is usually started shortly after April 20. The construction of the nest is rather deliberate. While nesting is usually well started by the first part of May, there are decided discrepancies in the time. The three following cases noted in a single season will illustrate these discrepancies: Nest No. 1—May 9, nest discovered and apparently complete; May 13, contained 3 eggs; May 14, complement of 4 eggs complete; May 27, contained young, apparently two days old. Nest No. 2.—Discovered May 22, contained no eggs. Nest No. 3—Discovered May 22, contained young about 5 days old.

There is almost if not quite as much variation in the time of rearing the second brood. On July 8 I have found a nest with a complement of fresh eggs and the next day two nests with young.

Orchard Orioles begin to flock in southern Louisiana and Mississippi in the latter half of July. The song is seldom heard after Aug. 1. In 1912, however, I heard one sing on Sept. 12.

This species becomes inconspicuous at Gulf coast latitude after the middle of August, though little companies of them may be in evidence for a few days at a time at intervals until Sept. 10 or 15. Such transients usually

form part of slight waves including other species. The latest date of departure is Sept. 26, 1914, near Poydras, St. Bernard parish. The average date of departure is about Sept. 15.

During 1912, 1913 and 1914 I made some notes on the time of the first singing of this species in the morning: 1912—April 25, first song at 4.40, morning clear; April 26, first song at 4.50, morning cloudy; June 14, first song at 4.20, morning clear; July 14, first song at 4.40, morning partly cloudy. 1913—April 27, first song at 4.50, morning clear; May 8, first song at 4.30, morning clear. 1914—June 6, first song at 4.10, morning clear.

214. BALTIMORE ORIOLE (*Icterus galbula*). A rather common summer visitor in the northern half of the State; breeds sparingly as far south as the latitude of Baton Rouge and Opelousas. Throughout the remaining portion of the State, it is known only as a rather rare and irregular spring transient, being practically unknown in fall. A pronounced bird wave about April 20 will usually be found to include this species. The following records of the appearance of this species in Louisiana and Mississippi in spring were made by the writer and Mr. Andrew Allison: 1899, April 1, Bay St. Louis, Miss.; April 13, 1902, New Iberia, La.; April 14, 1902, Bay St. Louis, Miss.; April 10, 1906, Ellisville, Miss.; April 17, 1907, Ellisville, Miss.; April 6, 1908, Jackson, Miss.; April 9, 1911, New Orleans, La. I have also four or five records of its occurrence between April 20 and April 25 at New Orleans and other south Louisiana points. The only record I have for fall transients near the Gulf coast is the occurrence of several at Biloxi, Miss., on Sept. 4, 5, 1905.

215. RUSTY BLACKBIRD (*Euphagus carolinus*). A common winter visitor, sometimes occurring in very large flocks, in fact I have seen flocks on the wing in the sugar country of southeast Louisiana in winter that stretched out for more than a mile. Frequents both the thick swamps and more or less open cultivated country, especially in spring. It becomes abundant in fall in southern Louisiana with the first heavy frosts the latter part of November or early part of December. The earliest record for arrival is Covington, La., Nov. 17, 1899. The earliest Mississippi records are, Ariel, Amite Co., Nov. 9, 1897, and Ellisville, Jones Co., Nov. 9, 1906.

The Rusty Blackbird remains common late in the spring, and at New Orleans I have seen fair-sized flocks about the borders of pastures until April or even May 1. The latest date for departure at New Orleans is May 10, 1899.

216. BREWER'S BLACKBIRD (*Euphagus cyanocephalus*). A rather rare winter visitor. I killed one from a flock of Rusty Blackbirds near Convent, St. James parish, on Dec. 23, 1893.

217. FLORIDA GRACKLE (*Quiscalus quiscula aglaeus*). This is the only form of the common Crow Blackbird that occurs in the swampy coastal section of the State, so far as I have been able to learn. It is abundant and occurs in practically all situations except the open marsh. It is often found in great flocks in the wet woods in winter and early spring. It nests

chiefly in the neighborhood of habitation, especially in groves of live oaks, and water oaks. Nesting begins early in April. The birds recorded by Dr. F. W. Langdon as *Q. purpureus* in the Journal of the Cincinnati Society of Natural History, Vol. IV, 1881, which were breeding at Baton Rouge were apparently referable to this form.

218. BRONZED GRACKLE (*Quiscalus quiscula æneus*). Never occurs, as far as I have been able to determine, in the section where the Florida Grackle is found. It is a fairly common breeder in the interior and northern portions of the State. I found it breeding commonly in Madison parish in 1896. Its numbers doubtless increase in winter.

219. BOAT-TAILED GRACKLE (*Megaquiscalus major major*). A strictly coastal species in Louisiana as far as I have observed. I doubt whether it ever occurs more than fifty miles inland. In summer it is confined to the marshes and very wet swamp lands. In the fall considerable numbers move on to the drained and cultivated lands. As with the Florida Grackle, nesting begins in the early part of April. In Audubon Park, New Orleans, a curious relationship between the movements of these two species is noted at this time. The numbers of the Florida Grackles increase in the park, numerous individuals arriving from the swamps to nest in the oaks of the park, while the Boat-tailed Grackles, which are present in large numbers on the meadowy stretches of the park throughout the winter, move off to their nesting sites in the marshes south of the city.

220. PURPLE FINCH (*Carpodacus purpureus purpureus*). Fairly common winter visitor except in the southern portion of the State, where it has been found only in severe winters. Numbers were seen at several points in the suburbs of New Orleans and in the woods near the city after Jan. 1, 1895. The last were seen March 23. In 1897, the first arrived at Ariel Amite County, Miss.; on Nov. 13. In 1901, the first arrived at Bay St. Louis, Miss., on Dec. 4, and the species became common Dec. 16.

221. AMERICAN GOLDFINCH (*Astragalinus tristis tristis*). Common winter visitor in all sections of the State. Doubtless breeds sparingly in the northern counties, as it certainly does in corresponding latitude in Mississippi. Its movements southward in fall, however, are rather late. Some records of fall arrival follow: Ellisville, Miss., Nov. 6, 1906; Ariel, Miss., Nov. 10, 1897; Covington, La., Nov. 12, 1899; New Orleans, Nov. 19, 1898. In September, 1907, I noted Goldfinches about Jackson, Miss., and in August I had seen them very little further north.

The latest date for spring departure at New Orleans is April 11, 1894 and 1896. At Bay St. Louis, Miss., the latest date of departure is April 23, 1902.

222. PINE SISKIN (*Spinus pinus*). A rather irregular and usually rather uncommon winter visitor, seldom reaching the fertile alluvial region of southeastern Louisiana. The earliest date of arrival of which I have any record is Nov. 29, 1908, at Woodville, Miss., and the latest date of departure is April 19, 1902, at Bay St. Louis, Miss.

223. VESPER SPARROW (*Poæcetes gramineus gramineus*). A common

but seldom abundant winter visitor. Least common in the fertile alluvial region in the southeastern part of the State. In 1899, the first was seen at Covington, La., on Nov. 2, and that is about the average time of arrival at that latitude. The last was reported in 1902 at Lobdell, West Baton Rouge parish on March 20, 1903.

224. SAVANNAH SPARROW (*Passerculus sandwichensis savanna*). Common winter visitor, particularly abundant in cultivated lands in the southeastern part of the State. Arrives at New Orleans usually during the first week in October, and becomes common by Oct. 15 or 20. A few may arrive sometimes shortly before Oct. 1, but I have no satisfactorily verified records showing such to be the case. Remains common until the latter part of April. Records for last seen are: May 9, 1897, New Orleans; May 12, 1903, Lobdell.

225. GRASSHOPPER SPARROW (*Ammodramus savannarum australis*). Probably occurs throughout the State as a summer visitor in the vicinity of cultivation. All records I have regarding it, however, were made in the fertile alluvial region of the southeast. It was formerly common in summer in the meadowy portion of Audubon Park, New Orleans, but I have not seen it there for ten or twelve years. Twenty years ago I found it most abundant on a sugar plantation in St. James parish. Though said to winter in Louisiana, I have never seen it except in summer. Records of arrival are: April 3, 1898, New Orleans; April 4, 1897, New Orleans (became common); April 4, 1903, Lobdell; April 8, 1895, New Orleans.

226. HENSLOW'S SPARROW (*Passerherbulus henslowi henslowi*). Have noted this species on two occasions at Covington, and think close search would prove it to be fairly common and regular in grassy pine woods in winter. The dates of observation at Covington are Nov. 2, 1899, and Jan. 23, 1905. Mr. Andrew Allison noted it at Ariel, Miss., Oct. 9, 1897, and at New Orleans, Nov. 30, 1899.

227. LECONTE'S SPARROW (*Passerherbulus lecontei*). I have never seen this species, but Mr. Andrew Allison noted one at Lobdell on April 23, 1903. He also saw about eight at Ariel, Miss., on Nov. 15, and made subsequent observations of it there.

228. NELSON'S SPARROW (*Passerherbulus nelsoni nelsoni*). I found this species in great abundance on Marsh Island on May 16, 1907, and on May 19 observed it and took a specimen at Sabine Pass. These may all have been migrants, as I have not observed it later in the year at other points on the coast, but on that supposition, the lateness of the date is rather remarkable.

229. LOUISIANA SEASIDE SPARROW (*Ammodramus maritimus fisheri*). An extremely abundant breeder in all tidewater marshes. I have seen scores at a time in the rushes and marsh grasses, perched just below the level of the grass tops, delivering in more or less regular concert their strange monotonous songs. The usual song sounds like "te-dunk-chee-e-e-e." Sometimes the trill alone is given. A nest found on Battledore Island,

July 23, 1908, contained four young a few days old. It was built of grass and the opening, on the side, was rather large. It was four feet from the ground in *Avicennia nitida*, a bush that is common along the coast.

230. LARK SPARROW (*Chondestes grammacus grammacus*). Occurs casually and at various seasons in the eastern part of the State. It is doubtless a resident wherever found, and I think it is likely it will be found fairly common in the western part as well. Have noted it also on the coast of Mississippi. In Louisiana I have seen it in Madison, Caldwell, St. James, Plaquemines and St. Mary parishes.

231. WHITE-CROWNED SPARROW (*Zonotrichia leucophrys leucophrys*). A decidedly rare bird in most if not all parts of the State. Have noted it in the late autumn and late spring but never in midwinter. Noted several adult males in song at New Orleans on May 1 and 2, 1897, an immature bird at Covington, Nov. 25, 1899, and an immature bird at Biloxi, Miss., Nov. 10, 1905.

232. WHITE-THROATED SPARROW (*Zonotrichia albicollis*). A very abundant winter visitor, especially in the wooded alluvial portion of the southeast. The earliest fully verified record of arrival is Oct. 13, 1900, at Covington, and it was seen on the same date in 1897 at Ariel, Amite county, Miss. It becomes fairly common about the end of October, and very common in November with the first cold weather. It remains common until the early part of April, and the last is usually seen a few days after April 20. The latest date of departure is April 27, 1903, at New Orleans.

233. CHIPPING SPARROW (*Spizella passerina passerina*). This species is entirely absent from the fertile alluvial region of the southeastern part of the State, in the prairie section, and doubtless in all low wooded lands along the Mississippi river similar to those in the southeast. In the pineries and wooded uplands it is a common resident, increasing very much in numbers in winter, of course, especially in the pineries of the southern part of the State. It became common at Covington, Nov. 11, 1899, at Ariel, Miss., Oct. 25, 1897, at Bay St. Louis, Miss., Oct. 31, 1901, and at Biloxi, Miss., Nov. 15, 1905. The bulk of winter visitors left Ellisville, Jones county, Miss., April 15, 1907.

234. FIELD SPARROW (*Spizella pusilla pusilla*). Never very common in the lowland sections of the State; breeds as far south as West Baton Rouge parish, however. Does not breed on the coast of Mississippi. The first was seen at Biloxi, Miss., Oct. 6, 1905, and there was a marked influx of winter visitors at Gulfport, Miss., Oct. 22, 1910.

235. SLATE-COLORED JUNCO (*Junco hyemalis hyemalis*). Decidedly rare in the extreme southern part of the State. Fairly common in winter at Covington. In 1897, the first was seen at Ariel, Miss., on Nov. 12. In 1907, the last was seen at Ellisville, Miss., on March 31.

236. BACHMAN'S SPARROW (*Peucaea aestivalis bachmani*). A fairly common resident in the pineries and in mixed upland growths of hardwood and pine, especially in small oak and pine thickets. Sings chiefly in the late winter, spring and early summer, being heard often in concert with the Pine Warbler.

237. SONG SPARROW (*Melospiza melodia melodia*). A rare bird in the lowland section of the State. In fact, the only record of which I have any knowledge is that of a specimen taken near New Orleans in the early part of March by Mr. Andrew Allison. In the winter of 1905-06, I noticed the first at Biloxi, Miss., Oct. 24, and the last on March 12.

[LINCOLN'S SPARROW (*Melospiza lincolni lincolni*). This species, so far as I know, has never been observed in Louisiana. It has been taken in spring in north Mississippi, however, by Mr. Andrew Allison.]

238. SWAMP SPARROW (*Melospiza georgiana*). In suitable locations, this is probably the most abundant winter visitor to the southern section of the State except the Myrtle Warbler. It is remarkably abundant in fresh water marshes, the edges of swamps and all undrained, overgrown places. The earliest record of arrival at New Orleans is Oct. 3, 1894, and it was common there Oct. 9, 1903. The first is usually seen in southern Louisiana and southern Mississippi about Oct. 8. Like the White-throated Sparrow it remains common until the early part of April. The last is seen a little later, usually about May 1. The latest date of departure is May 3, 1898, at New Orleans.

239. FOX SPARROW (*Passerella iliaca iliaca*). Rare in the southern part of the State. Several were seen and a specimen taken by Mr. Andrew Allison in a briery pasture on the edge of a wood on well drained land near New Orleans on Feb. 22, 1897. This is the only record of its occurrence in the southern part of the State of which I know. It has been reported as rather common in north Louisiana in winter.

240. TOWHEE (*Pipilo erythrophthalmus erythrophthalmus*). Resident; fairly common in most sections of the State; in the fertile alluvial section of the southeast it is found chiefly about the plantations or in woods better drained than the average timbered lands. In the prairie section it is a common and rather conspicuous inhabitant of mixed growths of briers, canes, etc. Individuals show remarkable attachment to the comparatively few spots in the fertile alluvial region where they occur. An unusually well drained piece of woodland near New Orleans that I have visited repeatedly in the past twenty years is practically the only spot in an area of 15 or 18 square miles where I have always been practically certain of seeing this bird.

241. CARDINAL (*Cardinalis cardinalis cardinalis*). Rivalled only by the Mockingbird and Carolina Wren among the smaller birds of the State in absolutely uniform abundance in every section.

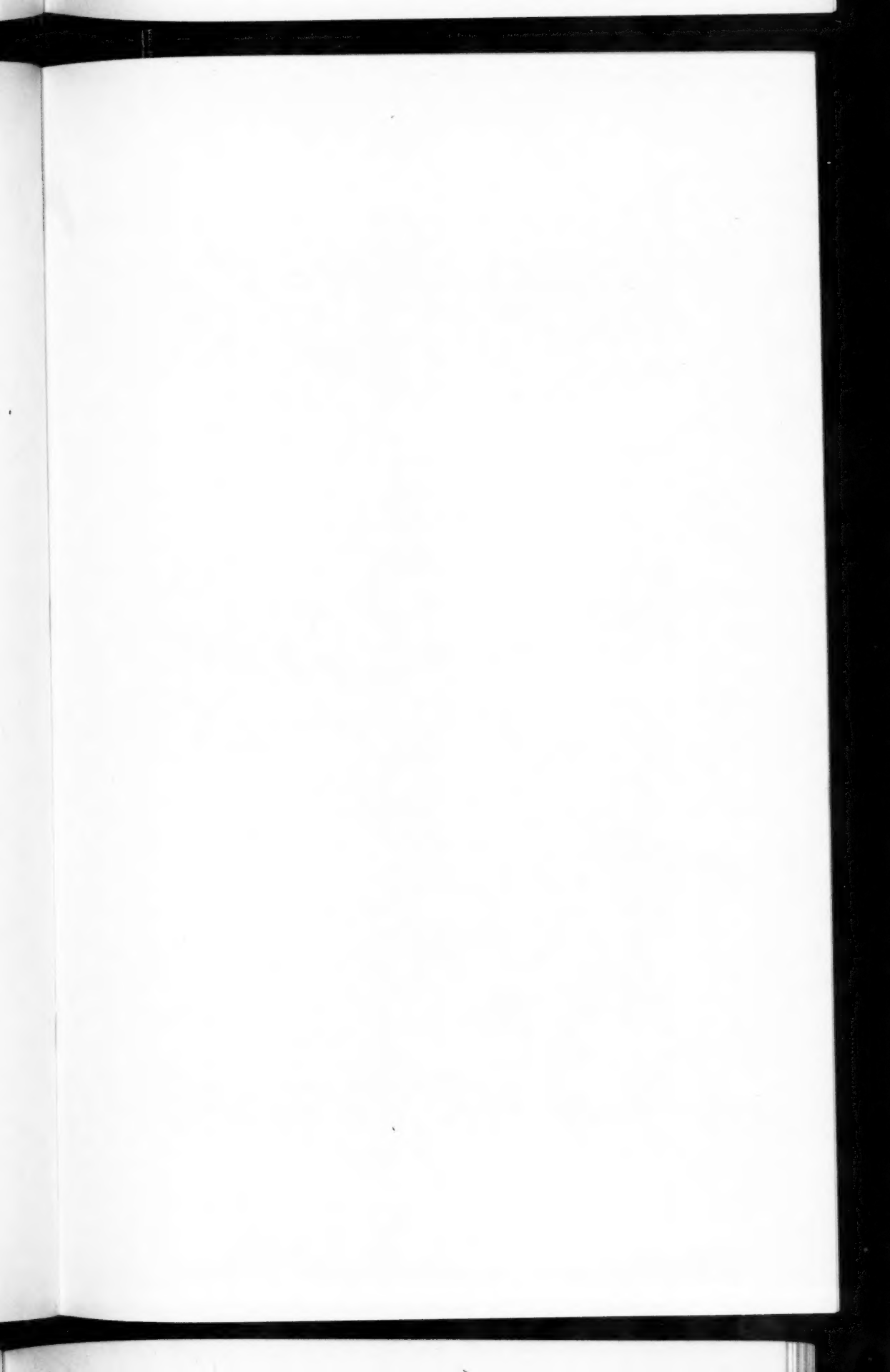
242. ROSE-BREASTED GROSBEAK (*Zamelodia ludoviciana*). Occasionally common in migration, either spring or fall, for a day or two at a time. In southern Louisiana, it is most apt to be noted the latter part of April and early part of October. The latest date of its occurrence at New Orleans in spring is May 6, 1897. Have never noted it in early spring, and in fact have no record of its occurrence before April 21. The earliest date of its occurrence in fall at New Orleans is Oct. 6, 1894. One was seen at Ellisville, Miss., Oct. 19, 1897.

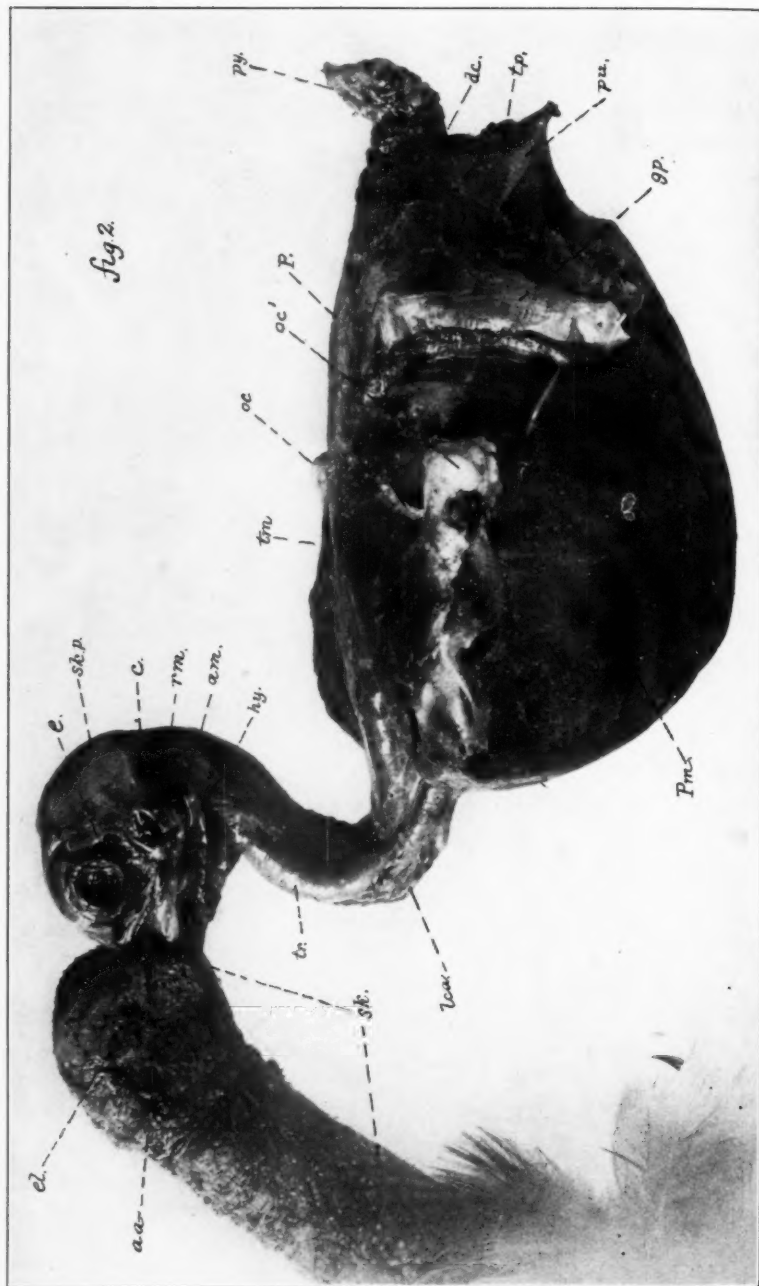
243. BLUE GROSBEAK (*Guiraca caerulea caerulea*). Only transient in the southern part of the State, and never common in the fertile alluvial region and probably not common at any time in the prairie section. Just how far south it breeds in Louisiana I do not know, but it has been found breeding in central Mississippi. Has been found commonest in Louisiana about cultivated lands in the piney regions of the southern portion of the State. The earliest record of arrival at New Orleans is April 8, 1898. The latest date of occurrence in spring is May 7, 1897. The earliest date of arrival in fall at New Orleans is Aug. 28, 1899, and this has been found to be about the average date of its arrival on the coast of Mississippi, where it is fairly common in fall. In 1905, the last was seen at Biloxi, Miss., Oct. 22.

244. INDIGO BUNTING (*Passerina cyanea cyanea*). Summer visitor, but not very common breeder in the southern part of the State; more common, however, in the fertile alluvial section than in the piney regions, being found sparingly on the sugar plantations and about other cultivation. Extremely abundant as a transient in the fertile alluvial section in both spring and fall, and in the piney sections in fall. The earliest date of arrival at New Orleans is March 26, 1899, and the first usually comes about March 30. It becomes common about the end of the first week in April, and usually reaches the height of its abundance from April 15 to 20. In the fall, the first transient is usually seen at New Orleans about Sept. 22. It is usually most abundant the second week in October, but is variably plentiful from about Oct. 5 to Oct. 18 or 20. The last is usually seen at New Orleans a few days after Oct. 20. At Biloxi, Miss., I saw one Nov. 1, 1905. The following notes of its occurrence at Covington, La., were made in 1899: "Greatest number came Oct. 6. Few of these were left Oct. 12. A second "wave" came Oct. 21. Last, Oct. 27."

245. PAINTED BUNTING (*Passerina ciris*). Summer visitor, commonest in the central southern and southwestern part of the State. In the prairie lands of St. Mary, Iberia, St. Martin and Lafayette parishes, it reaches its greatest abundance. It is decidedly common, however, throughout the cultivated lands of the fertile alluvial region of the southeast. The earliest record of arrival is March 23, 1894, Convent, La. It is seldom seen after the latter part of September. One was noted, at New Orleans, however, Oct. 26, 1895. Males in perfect plumage may be seen up to the time of the general departure of the species, and the late bird noted above was a male in full plumage.

246. DICKCISSEL (*Spiza americana*). When I began systematic observation of the birds of the State in 1893, this was a common spring transient at New Orleans, being noted in that year, and in the two years following. Subsequent to 1895, however, none was seen at New Orleans until 1899 and then not again until 1912. In all the seasons in which it was seen at New Orleans, it was present in Audubon Park as a late April transient. In some of these seasons, it was seen also elsewhere. Found this species breeding on the edge of a pasture in St. Mary parish in 1895, and the same





ANATOMY OF THE PASSENGER PIGEON.

year I saw a female, apparently near a nest, in Audubon Park the latter part of May. I have found it in summer also in Cameron parish, near the mouth of the Calcasieu river. The earliest date of arrival at New Orleans is April 18, 1895. I have no records of the fall movements.

(To be concluded.)

ANATOMICAL AND OTHER NOTES ON THE PASSENGER
PIGEON (*ECTOPISTES MIGRATORIUS*) LATELY LIVING
IN THE CINCINNATI ZOÖLOGICAL GARDENS.

BY DR. R. W. SHUFELDT.

Plates IV-VI.

ON February twenty-first, 1914, Mr. S. A. Stephan, General Manager of The Cincinnati Zoölogical Company, of Cincinnati, Ohio, wrote me that "Our Passenger Pigeon has been promised to the Smithsonian Institution when it dies. This bird is a female and now about 29 years old, and the last one of a flock of eight that we got in 1878." I have since learned that it was hatched in the Garden.

The specimen of which Mr. Stephan speaks was, beyond all reasonable doubt, the last living representative of its race in the world,—the last, the very last, of the millions upon millions of those birds which were known to pass over certain sections of the United States during their migrations to and from their feeding and breeding grounds. Many of us, whose birthdays date back to the middle of the last century and before, and who resided in the districts where these vast unnumbered hosts of migrating "blue pigeons" darkened the heavens for days at a time, distinctly remember the cruel, unnecessary slaughtering of those birds, untold thousands of which were never used for any purpose whatever; millions of others of which were slain for their feathers alone, while it is now impossible to form any correct estimation of the number

supplied to the markets of the time, or of those allowed to remain where they fell to the guns and other weapons of destruction of the army of slaughterers responsible for their extinction. All this is now past history, and will not be further touched upon in this article more than to say, that *Ectopistes migratorius* is now extinct; and what is here set forth is but a brief account of my personal observations upon the last known example of the species.

From Mr. Stephan, who wrote me on the 7th of September, 1914, I learn that "our female passenger pigeon died September 1st [1914] at 1 P. M. of old age, being about 29 years old." It was almost immediately packed in ice and shipped to the National Museum at Washington, D. C., where it was received in fine condition on the fourth of that month. On the morning of its arrival, Dr. Charles W. Richmond, Assistant Curator of the Division of Birds of the Museum, requested me, by telephone, to take part in making the record of the specimen.

When first seen and examined by me, the bird was in the possession of Mr. William Palmer of the National Museum, who had been delegated to skin it for Mr. Nelson R. Wood, of the Taxidermical Department, who, I was informed, was to have the honor of mounting it for permanent preservation in the Ornithological Exhibition Rooms of the museum.

I found the bird to be an adult female in the moult, with a few pin feathers in sight, and some of the middle tail feathers, including the long, central ones, missing. The feathers of the abdomen, and especially about the vent, were soiled to some extent, otherwise the plumage of the bird was smooth and good. It had the appearance of a specimen in health, with healthy eyes, eye-lids, nostrils, and mouthparts. The feet were of a deep, flesh-colored pink, clean and healthy, while the claws presented no evidences indicative of unusual age, though not a few of wear. Its weight was not taken.

At my suggestion, the bird was taken by Mr. Palmer to the photographic rooms of the museum, where, at about 11 A. M., it was thrice posed by me for photography. Three (8 × 10) successful negatives were at once made by the assistant photographer of the institution, giving the specimen on anterior, posterior and lateral views, with about one-fourth reduction.

Shortly afterwards (1.15 P. M.), Mr. Palmer and I arrived with the specimen at my home (3356-18th Street, Washington, D. C.), and in one of my work rooms (on the third floor, back room) facilities were immediately given him to skin the specimen. Previous to his commencing this operation, I made duplicate (5×8) negatives of the head of the bird with my vertical camera, and successfully developed them in the dark-room, next to where Mr. Palmer had started in to make the skin.

Apart from the legs and wings, when Mr. Palmer had carried the skinning to the base of the mandibles, I made another exposure with the same camera, the subject being the body of the specimen, natural size, on left lateral view. A reproduction of this unusual photograph is shown in Plate I of this contribution, and is valuable on a number of accounts as exhibiting the size of the body; of the eye; position of the trachea; the great size of the *pectoralis major* muscle, etc. After this, the eyes and brain were consigned to alcohol; and while I was developing the aforesaid plate in the dark-room, Mr. Palmer completed the skinning of the specimen, having set the body aside for me for anatomical description.

Immediately after this we partook of a "late lunch" in the dining-room below, and, at a little before 4 P. M., Mr. Palmer repaired to his home with the skin in his possession, while I went up to my laboratory on the third floor to make a preliminary survey of the body, prior to making any additional photographs that might be necessary for illustration.

There was no fat present anywhere externally, where it occurs in birds to a greater or less extent, between the dermal tissues and the superficial muscles and other structures. I found, on the right side of the abdomen, a slit-like opening, one-half a centimeter in length, which led freely into the abdominal cavity, and from which blood was oozing. This opening I enlarged in order to withdraw the viscera for the purpose of making a photograph of them, previous to proceeding with the dissection of the organs within. This has been my practice for a great many years.

Much to my surprise, I found a quantity of blood (not clotted) in the abdominal cavity, and the right lobe of the liver and the intestine almost entirely broken up, as though it had been done with some instrument. As to the intestine, it was missing alto-

gether, while the right lobe of the liver was in scattered fragments. The firmer organs were apparently intact, but did not occupy their normal positions. This left but one course for me to adopt. I therefore evacuated the blood, washed out the abdominal cavity carefully, and consigned the entire body to a jar containing fresh, denatured alcohol, which I had purchased for the purpose.

My hope was to have made a dissection, to be photographed similar to my colored plate of a female tame pigeon, which forms the frontispiece to the *Key to North American Birds* by Dr. Elliott Coues (Revised Edition, 1884), or to my dissection of the young of *Phalacrocorax atriceps georgianus* (Pl. 18, Fig. 6), where, in either case, all the viscera are displayed and duly lettered.¹

The colored pigeon plate I refer to should prove helpful to one not especially familiar with the organs and other structures in the *Columbidæ* while reading the anatomical part of the present paper. There is an interesting contribution to the anatomy of *Ectopistes migratorius* in Audubon's "*Birds of America*," for which we have to thank the learned Scotch naturalist, William MacGillivray.²

This description is devoted almost entirely to the organs and structures included in the digestive system and to the anatomy of certain parts of the air passages. Up to the present time there has been nothing — so far as I am aware — contributed to the myology of the Passenger Pigeon, or to certain other parts of its morphology, while recently I have given a brief, illustrated account of its skeleton.³

THE BRAIN: As stated above, Mr. Palmer removed the brain as best he could, after skinning the head of the bird, and it was at once consigned to alcohol.

¹ SHUFELDT, R. W. "Anatomical Notes on the young of *Phalacrocorax atriceps georgianus*." *Science Bulletin*, Vol. 2, No. 4. The Museum of the Brooklyn Institute of Arts and Sciences, "A Report of the South Georgia Expedition." Edited by Robert Cushman Murphy. (Nov. 5, 1914), pp. 95-101. Pls. 17, 18.

² AUDUBON, JOHN JAMES. "The Birds of America from Drawings made in the United States and their Territories." Vol. V, New York, 1839, pp. 34, 35. Page 35 is devoted to a drawing by MacGillivray giving — anterior view and somewhat enlarged — the digestive tract of an adult male specimen (preserved in spirits) of *Ectopistes migratorius*.

³ SHUFELDT, R. W. "Osteology of the Passenger Pigeon (*Ectopistes migratorius*). *THE AUK*, Vol. XXXI, No. 3, July, 1914, pp. 358-362, Plate XXXIV. I have also published other papers on the osteology of this bird in the *Proc. Zool. Soc. of London*, *Journal of Morphology*, *American Naturalist*, etc.; these are duly cited in 'The Auk' article.

I find the *cerebellum* to be 8 millimeters long and 6 mm. wide at its middle part. It projects posteriorly considerably beyond the cerebral hemispheres, and exhibits, on its strongly convex posterior aspect, six transverse sulci, in which minute vessels ramify. The optic lobes—one upon either side—are large and of an ellipsoid form; they cover, in either case, the point of radiation of the sulci laterally, which point (the *flocculus*) is frequently well exposed in tame or domesticated pigeons.

Having the usual form as seen in the *Columbidæ* generally, the cerebral hemispheres are in contact with each other mesially and with the optic lobes below. The cerebral vessels ramify superficially upon the surface of each, while between them, posteriorly, the small *pineal gland* is in view. Upon direct superior view, the cerebral hemispheres nearly shut out the optic lobes from sight.

Anteriorly, the *olfactory lobes* are well developed and project beyond the hemispheres,—the first pair of cerebral nerves were divided close to them. Likewise, the second pair of optic nerves were divided close to the rather large *optic tracts* at the base of the brain-mass.

Measuring across the widest part of the cerebral hemispheres, I find it to be a distance of 18 mm., while the length of the cerebral sulcus is 9 mm.

THE EYE: In my above cited paper on the osteology of the pigeon, I have already noted the characters of the *sclerotic plates* (p. 360), and I may add here that the average antero-posterior diameter of the eye is found to be 14 mm., its transverse diameter being about 9 mm. There appears to have been nothing peculiar in the external musculature of this organ, beyond what we find in the typical eye of ordinary existing birds,—the pigeons in particular. Posteriorly, the *optic nerve* is not surrounded by an "osseous plate," as it is in the Raven.¹

Internally, the *pecten* presents nothing unusual, and the *lens* has a diameter of about 4.5 mm.

My next procedure in this dissection required me to separate the immense *pectoralis major* muscle from its origin upon the sternum on the right side, and to deal with the *pectoralis secundus* and

¹ SHUFELDT, R. W. "Myology of the Raven," p. 60, fig. 23.

pectoralis tertius muscles in a similar manner. Following this operation, I disarticulated the four right costal ribs at the costal border of the sternum, and also the right coracoid at its sternal extremity. This allowed, in part, a turning of the sternum to one side, and permitted a better view of the interior of the thoracic and abdominal cavities.

There was no evidence whatever of the presence of the *intestine* in any part of its continuity save a piece about 8 mm. in length, where it emerged from the gizzard and the ragged margin surrounding the abdominal boundary of the vent. All the portion referred to was not in the abdominal cavity.

The entire *right lobe* of the rather large *liver* was in a disintegrated condition, showing its internal structure, and exposing the organs usually concealed by it to view.

The *heart* was in its normal position, while the gizzard was rotated to the left side. I discovered no *blood clots* or *parasites* of any kind in the abdominal cavity.

Without making very complete dissections, it was nevertheless evident that the three pectoral muscles and the superficial muscles of the back made origins and insertions similar to those in existing *Columbidæ* generally.

Os furculum was next disarticulated at its right coracoidal articulation, and the usual muscles and ligaments in the vicinity divided at different points. This admitted of a far more extended view of the organs and structures within the thoracic and abdominal cavities. This view I at once made a five by eight negative of, the reproduction of a photograph of which is here seen in Plate V.

Extremely simple in its network of nerves, the *brachial plexus* is primarily formed by the union of the last two cervical nerves and the first two dorsal ones. They soon unite as a single *faciculus*, from which, as usual, the branches are derived to supply the wing.

Passing for the moment to the pelvic basin, I found the *kidneys* occupying their usual sites, and neither one appeared to present any atrophy or other evidences of disease; they are of equal size and each tri-lobed.

On the other hand, a certain degree of atrophy characterizes the left *ovary* and its *duct*,—a condition we might naturally expect in a bird of this age, and one which had lived so long in confinement.

Beyond this atrophy, the organ is normal and presents nothing worthy of special note. The *right ovary* is quite rudimentary, so rudimentary, indeed, and associated as it is with the mutilation of the various organs of the abdominal cavity, referred to in a previous paragraph, that, in the absence of a microscopical examination, this ovary and oviduct might be mistaken for something else, though not likely, as I am familiar with its appearance in a great many species of birds, including the Pigeons.

As I am unable to give any account of the *intestine* owing to the aforesaid absence, I will quote MacGillivray on the subject, his specimen having been an adult male in spirits. Omitting the reference letters to his figure, he says: "The intestine is 4 feet long, 4 twelfths in width, at the narrowest part only 2 twelfths. The duodenum curves in the usual manner, at the distance of three inches. The intestine forms six folds. The cœca are extremely diminutive, being only $1\frac{1}{2}$ twelfths in breadth; they are 2 inches distant from the extremity; the cloaca [is] oblong."

Neither the large *lungs* nor any of the *air-sacs* I examined presented anything peculiar, nor do they depart in any way from those structures as they occur in ordinary large wild pigeons generally. The lungs were very dark, and appear to have been congested at the time of death.

Posterior to these, the *spleen*, the *ovaries*, the *adrenals*, and the *pancreas* were all either broken up, as described above, or entirely removed, which was the case with the *pancreas*, as it, in pigeons, occurs in a loop or fold of the duodenal division of the intestine.

For the purpose of further anatomical description, I determined at this point to remove from the trunk various organs and structures that could not well be described *in situ*. These included the *respiratory apparatus*, the *heart* and *great vessels*, the *digestive tract*, remains of the *liver*, etc.

RESPIRATORY AND VOCAL ORGANS: As the 1839 octavo edition of Audubon's *Birds* (Geo. R. Lockwood ed.) is accessible but to the few, I am taking the liberty of quoting here the essential paragraphs of MacGillivray (as cited above) on some of the remaining organs, in that the student may note the agreement or disagreement, as the case may be, with my own observations as set forth below. Be it remembered, however, that MacGillivray's spirit specimen was a male bird, and the one here being described is a female.

Among other observations left us in the account, he said: "The mouth is very narrow, being only $4\frac{1}{2}$ twelfths in breadth, but capable of being dilated to the width of 1 inch by means of a joint on each side of the lower mandible." The "joint" he refers to is the quadrato-mandibular articulation, and, so far as I am aware, the arrangement is the same in all pigeons. He continues by saying that "There are two thin longitudinal ridges on the palate, of which the sides slope upwards. The posterior aperture of the nares is $\frac{1}{2}$ inch long, margined with pupillæ. The tongue is $7\frac{1}{2}$ twelfths long, rather broad and sagittate at the base, with numerous small papillæ, but at the middle contracted to $1\frac{1}{2}$ twelfths, afterward horny, very narrow, induplicate, and ending in a rather sharp point."¹

MacGillivray gave the shape of the *tongue* about as I find it in this specimen. It is distinctly longitudinally grooved upon its dorsal surface in the middle line, while it is convex from side to side ventrally. Posteriorly it is deeply and *roundly* concaved, the free margin of which is embellished with a fringe of minute and delicate papillæ, which are white and about 32 in number. A row similar to these are found upon the posterior free margins of the upper larynx. The *rima glottidis* is of an elongate, cordate form, with the median apex behind. Its margins are thickened and raised. On its side, the horny part of the tongue measures 14 mm. and its middle longitudinal line 11 mm. Rima glottidis has a median longitudinal length of 5 mm. The laryngeal and hyoidean muscles present nothing peculiar or noteworthy. Behind, the larynx has a transverse diameter of six mm., and each lateral part is rounded posteriorly, being fringed as above described.

William MacGillivray, when he described the anatomy of *Ectopistes migratorius* for Audubon, was entirely correct when he recorded that "The trachea passes along the left side, as usual in birds having a large crop; its length is $2\frac{3}{4}$ inches; its breadth varying from $2\frac{3}{4}$ twelfths to $1\frac{1}{2}$ twelfths; its rings 105, feeble; the last ring large, formed laterally of two rings, with an intervening membrane. Bronchi of about 15 half rings and narrow. The lateral

¹ In my former article in 'The Auk' cited above, I have already given a brief account of the bones of the *hyoid arches*, so it will be unnecessary to say anything further about them here. R. W. S.

muscles strong, as are the sterno-tracheal, which come off at a distance of $\frac{1}{2}$ inch. There is a single pair of inferior laryngeal muscles going to the upper edge of the last tracheal ring." (*loc. cit.*, p. 34.) To this I may add that a *pessulus* does not form a part of the lower larynx in this pigeon; apparently there is not even a rudiment of one.

The superior division of the *œsophagus*, twenty-five millimeters in length, is a strong, muscular tube of uniform caliber, and capable of considerable extension. Externally, its fibers run longitudinally. At the distance above mentioned from the buccal extremity, it suddenly dilates into an enormous *crop*, which, when filled, has an ellipsoidal form, with the major axis transversely disposed. This axis measures about 54 millimeters, while the minor axis or longitudinal one is about one-fourth less.

In a male bird, MacGillivray found the crop much larger, or 63 by 77 millimeters. Below, the crop in the present specimen has nearly a uniform caliber for a distance of 27 millimeters. It is strong and muscular, with muscular plicæ longitudinally raised upon its extreme surface. Still further along, it gradually dilates, to become the *proventriculus*, which, terminally very considerably enlarged, enters the *gizzard* or *stomach*. This latter is placed obliquely in the abdominal cavity as shown in Plate V.

MacGillivray found the gizzard in the male bird much larger than it is in the female here being described. He states that it was two inches and two-twelfths in breadth, and one inch and one-fourth in length. The gizzard at hand is but little more than half this size. It has the usual structure found in the *Columbæ*, and I found its internal cavity to contain a dozen or more quartz pebbles of the size of coarse bird-shot. The *musculus intermidias* of this gizzard is strong and well developed; its form, from two views, is shown in the plates, as well as its internal structure on section.

In a former paragraph I have already described the condition in which I found the *right lobe of the liver*, when I opened the abdominal cavity, and this leaves but the smaller *left lobe* for consideration. It has a transverse diameter of 21 millimeters, and an average longitudinal one of some 12 mm., not taking into consideration the three distal processes it presents: a small median one, and one upon either side of double its size. This distal margin is sharp,

which, to a less degree, is the case with the rounded or convex anterior contoural boundary. On the dorsal aspect there is a deep concavity, which allows the liver to fit itself upon the supero-anterior surface of the gizzard.

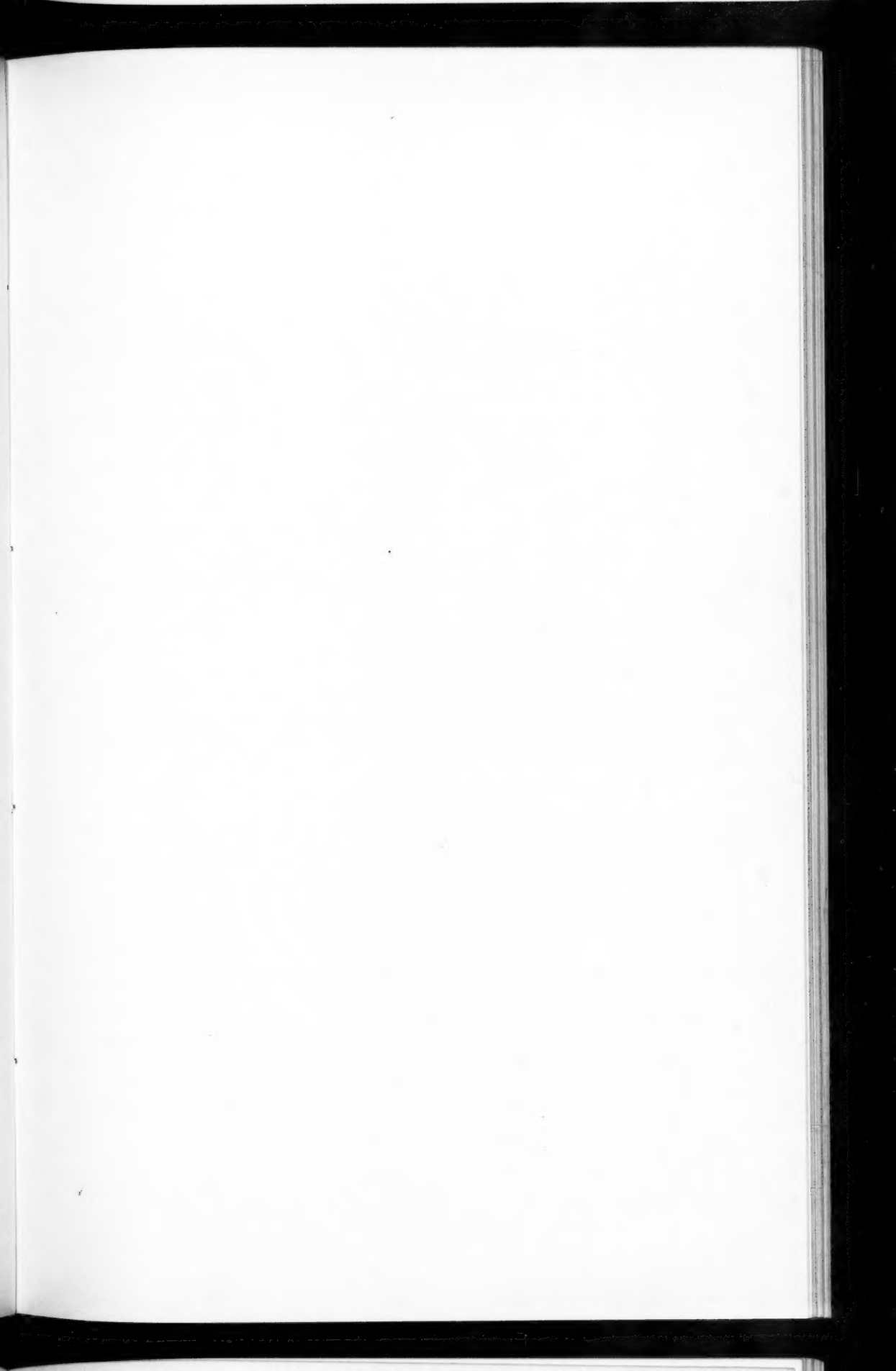
The *right* and *left bile ducts* were not in evidence, and the various divisions of the peritoneum could not be worked out entirely.

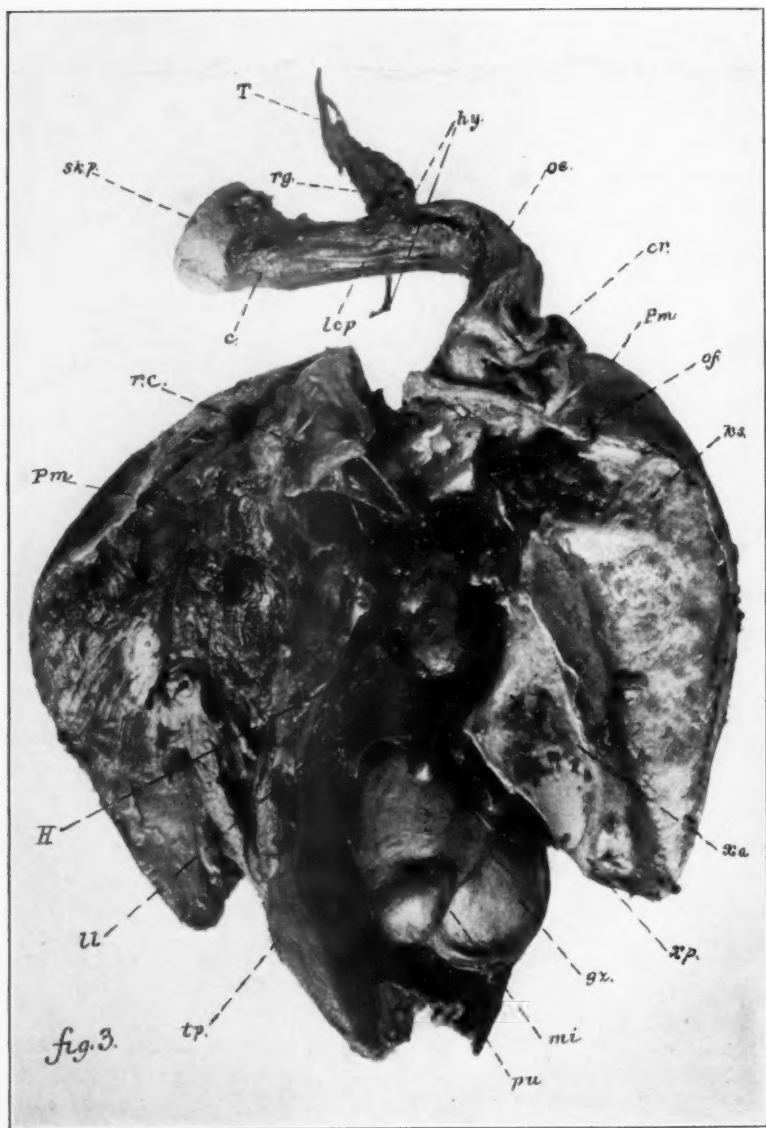
Coming to the *heart*, I find it to have an extreme length of 23 millimeters, and a transverse diameter, above the ventricles, of 14 millimeters. I examined with great care all the vessels entering and leaving its several cavities and their main branches; they are identically the same as they occur in *Columba livia*, as described by the late T. Jeffrey Parker in his admirable text-book entitled "A Course of Instruction in Zoötomý (Vertebrata)," on page 241, Fig. 56. There is every reason to believe that the internal anatomy of the *auricles* and *ventricles* of this heart of the Passenger Pigeon agree, in all structural particulars, with the corresponding ones in any large wild pigeon, as for example *C. fasciata*. I therefore did not further dissect the heart, preferring to preserve it in its entirety, — perhaps somewhat influenced by sentimental reasons, as the heart of the last "Blue Pigeon" that the world will ever see alive.

With the final throb of that heart, still another bird became extinct for all time, — the last representative of countless millions and unnumbered generations of its kind practically exterminated through man's agency.

Were I to go as far as I could into this subject of the anatomy of the Passenger Pigeon, my collected observations would afford matter for several good-sized volumes. Even the mutilated material before me might furnish several chapters on the myology of this species; on the circulatory system; the nervous system; histology of the structures, and a great deal more besides.

In any group of vertebrates, birds included, it is always an advantage to have published the *entire morphology* of some particular species of a group, as for example a typical pigeon of the genus *Columba*. Then, with respect to the morphology of species belonging to genera evidently closely related to *Columba*, it will but be necessary to make record of enough, with respect to their minute and gross anatomy, to establish the fact that our investigations have led us to a point where we can predict, with absolute cer-





ANATOMY OF THE PASSENGER PIGEON.

tainty, what the balance of the morphology will be in any particular case. It is always well, however, to make a careful comparison of the skeleton in the case of all the genera of a family, and it requires a comparative vertebrate morphologist, with a very vast and varied fund of knowledge of his subject, to decide, in any instance, just what amount of data to obtain, in the case of any particular species to be anatomically investigated, when the entire morphology of a typical representative of a closely related genus is known.

If what I have thus far attempted to present of the osteology of *Ectopistes migratorius*, and of the rest of the anatomy of that species,—and knowing what he already knows of the morphology of *Columba livia* and other pigeons,—will enable the ornithotomist to surmise, perhaps with more than comparative certainty, what the undescribed parts of the anatomy of *Ectopistes migratorius* would reveal upon investigation, I feel that my researches have accomplished all that I could hope for in this regard, with respect to our now extinct Passenger Pigeon, and that my labor has been well repaid.

EXPLANATION OF PLATES.

(All the figures in the Plates are by the author, and made, either by drawing or photographic reproduction, direct from the subjects they depict.)

Reference Lettering.

- aa. internal dermal margin of the auricular aperture.
- am. angle of mandible.
- c. complexus muscle (Figs. 2, 3.)
- cr. crop. (Figs. 3, 4 and 4.)
- ct. intestine cut away close to the external surface of the gizzard.
- dc. depressor caudæ muscle. (Fig. 2.)
- e. eye. (Fig. 2.)
- el. internal view of eyelids. (Fig. 2.)
- gp. gluteus primus muscle. (Fig. 2.)
- gz. gizzard. (Figs. 3, 4 and 5.)
- H. heart. (Figs. 3, 4 and 4.)
- hy. hyoid with muscles attached. (Figs. 2, 3, 4 and 5.)
- ks. keel of sternum. (Fig. 3.)

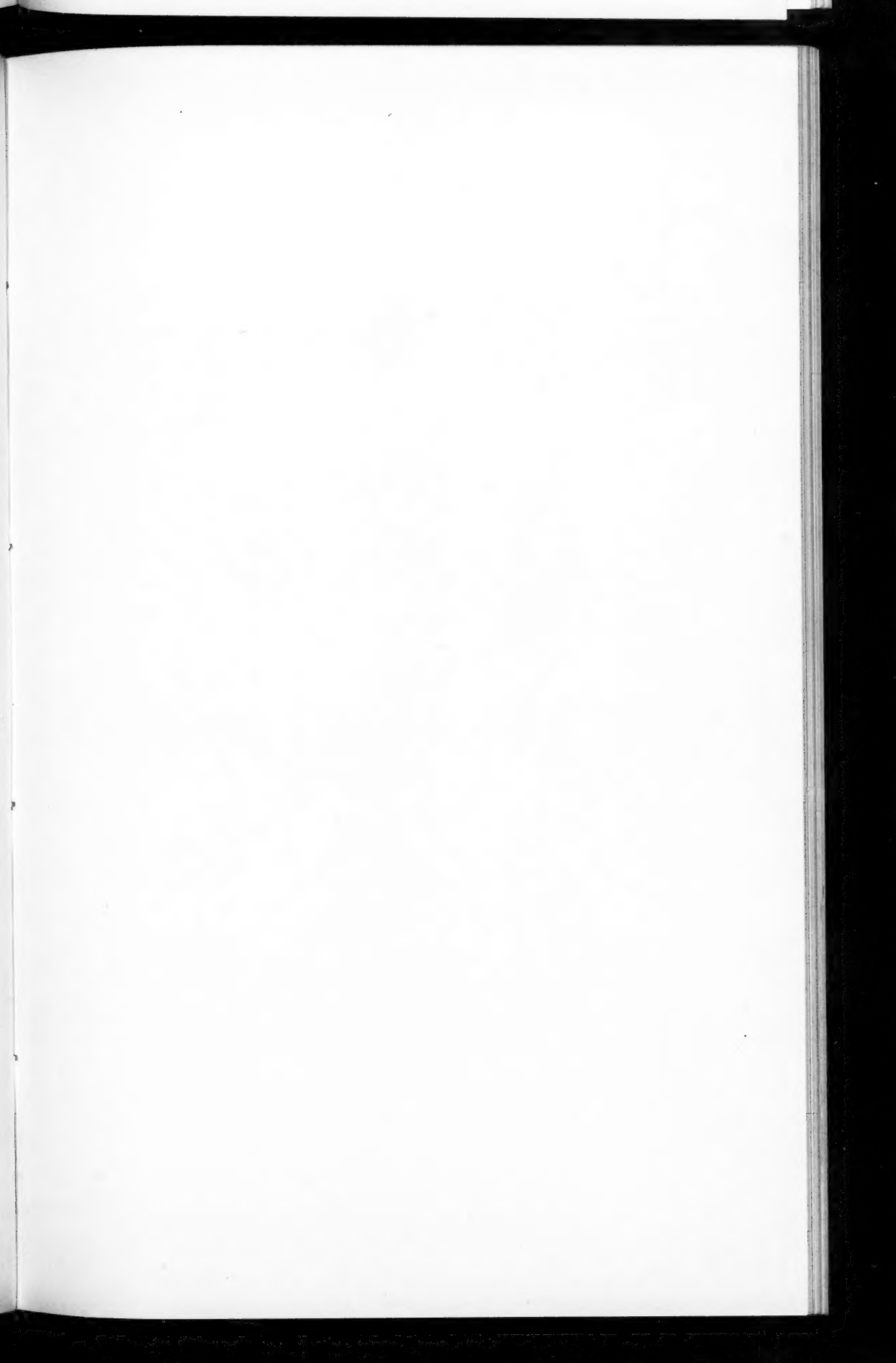
- lcp.* longus colli posticus muscle. (Fig. 3.)
ll. left lobe of liver. (Figs. 3, 4 and 5.)
mi. musculus intermedius of the gizzard. (Figs. 3, 4 and 5.)
oc. oblique condyle of right humerus. (Fig. 2.)
oc.' oblique condyle of left humerus. (Fig. 2.)
oe. œsophagus. (Figs. 3, 4 and 5.)
of. os fureculum. (Fig. 3.)
P. pelvis.
ph. pharynx or entrance to œsophagus. (Fig. 5.)
Pm. pectoralis major muscle. (Figs. 2 and 3.)
Pr. proventriculus. (Figs. 4 and 5.)
pu. pubic bone of pelvis. (Figs. 2 and 3.)
py. pygostyle. (Fig. 2.)
r.c. right coracoid. (Fig. 3.)
rg. rima glottidis. (Figs. 3 and 5.)
rm. rectus capitis posticus major muscle. (Fig. 2.)
s. lower larynx and bronchial tubes. (Fig. 5.)
sk. skin of head and neck of the left side. (Fig. 2.)
sk.p. parietal region of cranium. (Figs. 2 and 3.)
T. tongue. (Figs. 3, 4 and 5.)
tl. tracheo-lateralis muscle. (Fig. 7.)
tm. teres et infraspinatus muscles. (Fig. 2.)
tp. transversus peronei muscle. (Fig. 2.)
tr. trachea. (Figs. 2, 4 and 5.)
xa. anterior xiphoidal process of sternum of right side. (Fig. 3.)
xp. posterior xiphoidal process of sternum of right side. (Fig. 3.)

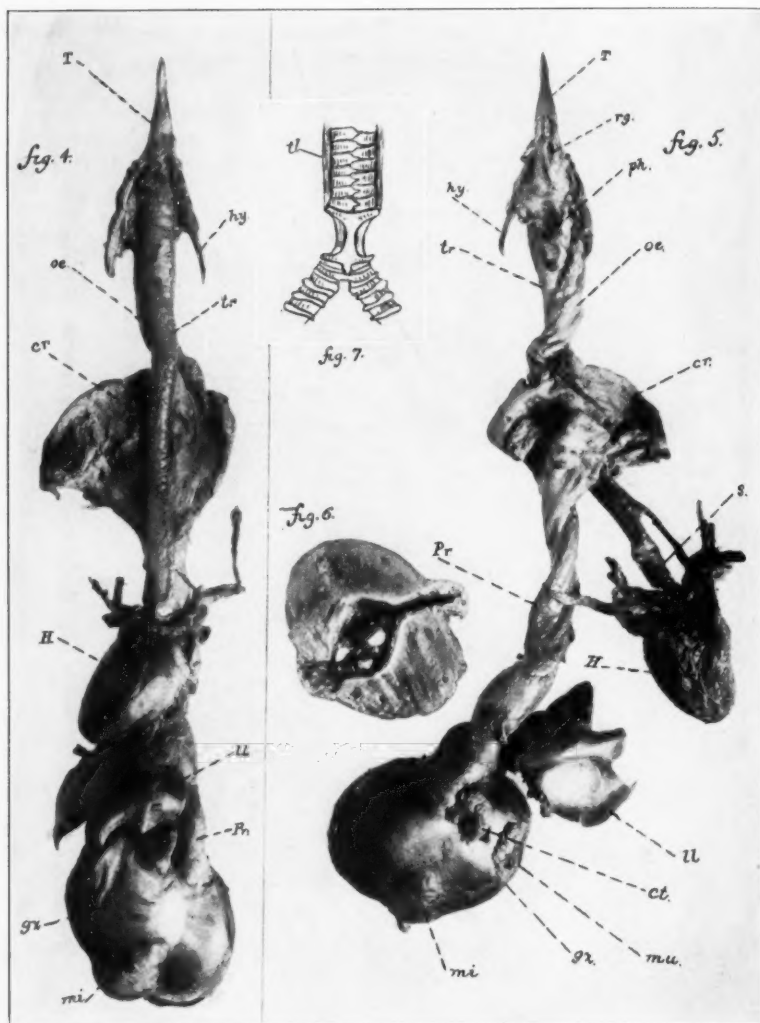
PLATE IV.

FIG. 2. Skinned head, neck and trunk of *Ectopistes migratorius*; nat. size. The reversed skin attached to the base of the mandibles. *Humeri* and *femora* still attached and partly covered with their muscles. Forearm; hand; the pelvic limbs below the knee, and the uropygial glands have all been removed.

PLATE V.

FIG. 3. Neck and trunk of *Ectopistes migratorius* (same specimen). Skull and associated parts anterior to aural apertures have been cut away. Hyoidean apparatus, trachea and œsophagus drawn down considerably below normal position. Crop empty and wrinkled up. Os fureculum dislocated at right shoulder, and right coracoid thrown out of its sternal articulation. Right pectoral muscles and other structures dissected away from sternum and drawn far to one side. Right side of sternum in full view. Thoracic and abdominal cavities opened up ventrally, and heart, left lobe of liver, gizzard, etc. exposed to view.





ANATOMY OF THE PASSENGER PIGEON.

PLATE VI.

FIG. 4. Tongue, hyoid, trachea, heart, liver and digestive organs removed from their cavities and photographed on anterior or ventral view. The crop (*cr.*) has been turned around to occupy the posterior aspect of the windpipe or trachea, in order that the latter may be seen for its entire length. The cardiac extremities of the great vessels at the base of the heart can easily be recognized. The left lobe of the liver (*ll.*) and the gizzard are in the normal relations to each other.

FIG. 5. Same structures and organs as seen in Fig. 4. The tongue and pharynx are seen upon dorsal view; the crop and oesophagus are twisted about the trachea in order to show the reverse side of the first-mentioned organ. The lower part of the trachea (lower larynx) and bronchial tubes are seen. Heart and great vessels are shown upon posterior aspect. The left lobe of the liver is thrown forwards in order to give a complete view of the gizzard, which latter has been bisected and turned so as to show its dorsal surface.

FIG. 6. Interior aspect of the anterior moiety of the gizzard exhibiting the muscular portion, with the central cavity filled with small pebbles.

FIG. 7. Anterior view of the lower part of the trachea; the lower larynx, and the bronchial tubes. About twice natural size, and drawn by the author direct from the specimen.

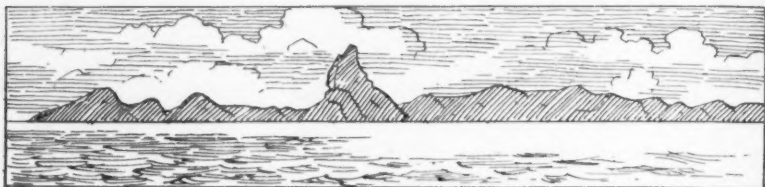
TEN HOURS AT FERNANDO NORONHA.

A DAY'S COLLECTING ON THE SOUTH GEORGIA EXPEDITION OF
THE BROOKLYN MUSEUM AND THE AMERICAN MUSEUM OF
NATURAL HISTORY.

BY ROBERT CUSHMAN MURPHY.

ON October 15, 1912, the good whaling brig *Daisy* of New Bedford was running merrily across the trade wind just south of the equator. All day long, boobies and other passing sea birds told us that we were nearing land, and at nine in the evening we made out the twinkling, revolving light of an island lying under the bright quarter moon. We hauled aback our square sails and lay to for the night.

The bold, overhanging "Pyramid" of Fernando Noronha, a black, phonolite mountain which is the most conspicuous landmark in all the South Atlantic, loomed out about nine miles distant



in the following dawn. As we bore down toward the land in the hazy light, the long strip of rough hills, which had first seemed continuous, gradually broke up into the several islets of which the group is composed. The sun, leaping above the equatorial horizon, revealed a green lowland, well clothed with shrubs and small trees, and a higher zone of bare, weathered peaks. The four tall, skeleton "wireless" towers were probably the only features which had been added to the landscape since Charles Darwin in the *Beagle* visited this Brazilian penal settlement fourscore years ago.

Fernando Noronha lies in latitude $3^{\circ} 50' S.$, longitude $32^{\circ} 25' W.$, two hundred miles off the South American mainland from which it is divided by a channel 13,000 feet in depth. The rugged group is only about seven miles long, by one and a half in width. The component islets, portions of the crater rim of an ancient volcano, are of basaltic rocks, without sedimentary deposits, but with injected dykes of phonolite or "clinkstone," the whole now almost worn away by the action of the denuding tropical rainfall and the battering seas, although the famous, columnar Pyramid still rises to a height of 1,089 feet. Most of the smaller islets are bare of vegetation except for a few grasses and sedges, some thickets of a low shrub (*Phyllanthus*), and several leguminous vines. Parts of the main island are covered by a variety of stunted trees and shrubs, including an endemic fig (*Ficus noronhæ*) and a leguminous tree (*Erythrina*). There is a large percentage of widely distributed tropical weeds, and a remarkable number of plants having edible berries or seeds. Within the memory of man the leeward side of the land was heavily forested, but the larger trees have long since

been felled in order that the exiled convicts, practically the only human beings to share the sea-beaten spot with countless nesting ocean birds, might not build rafts and escape to the shores of Brazil.

When the *Daisy* had drawn within a couple of miles of the coast, whaleboats were lowered, and I went ashore along with a fishing party. On the way to the land we were surrounded by an enormous flock of Noddy Terns which stretched away to the far horizon until the birds appeared like tiny, swarming insects. Passing several conical inaccessible islets, on which Man-o'-war-birds were breeding, we entered a cove of grottoed rock ending in a crescent of sand. Behind the beach the fissured, yellow wall of a cliff, conforming with the semicircular outline of the cove, rose sheer to a height of four or five hundred feet, and clustering in thousands along its upper surface were graceful Noddies on their scaffold nests. Side by side on a twisted bough at the foot of the cliff sat two snow-white "Love Terns" (*Gygis*), antitheses of the black Noddies.

The cool water of the cove lured us to a swim, and, as several of us plunged in, the blurred image of a green turtle glided away before us, and a shoal of porpoises see-sawed leisurely across the inlet. One of the sailors fired his gun from the whale-boat at something or other (which he did not hit), and the roar reverberated from face to face of the curving wall, while a horde of screaming birds poured down off the rocks, adding to the bewildering echoes.

Other inhabitants than the birds were also disturbed by the report of the gun. When we turned toward the beach a tall, black, muscular fisherman, with a tattered seine over one shoulder, and wearing not a stitch of clothing, stood eyeing us curiously. Presently out of the shrubbery below the cliff came a fellow of lighter skin, clad in short canvas trousers and a blue tam-o'-shanter cap, with a crude wicker basket slung over his back. The pair might have passed for Robinson Crusoe and his man Friday on washday. The cap of the second native came off obsequiously when we landed, while both men extended a right hand of welcome and ingenuously explained in Portuguese that they were murderers serving sentences on the isle. The quadroom had been there fourteen years, and his durance was to terminate at the close of eight months more when he would return to his native Pernambuco.

He directed us to a better beach around the westward promontory, where he said he would meet us. Accordingly we pushed off shore, while the poor islander, taking a pair of goatskin sandals from his basket, painfully toiled up a stony, winding path across the ridge, leaving his comrade to cast the net alone.

After our whaleboat had rounded the point of rock there lay before us a charming bit of seashore. The broad beach of golden sand stretched in an even curve to another headland a mile beyond, and sloped gently into the sea which for a long distance from shore was wondrously transparent. The upper beach was a riot of vegetation, among which the tropical morning-glory, *Ipomæa pes-capræ*, and a slender-stalked cactus (*Cereus*) were conspicuous; and still beyond, a thicket of brush and trees, filled with fruit-eating doves (*Zenaidura*), concealed the base of the precipice. The latter ran parallel to the water-line as far as the distant headland. Its lower face was covered with vines which clambered up the seams, and its crest was bordered with pink and orange-colored blossoms of small trees whose roots drooped over the edge. Sharp slabs of rock projected here and there, offering perfect nesting sites for the birds which appeared in hosts whichever way we turned. The chattering Noddies, of two species, were most abundant, but large-eyed *Gygis* terns, and satin-feathered Bo'sun Birds (*Phaethon*), trailing their comet tails, were flying to and from the niches in the cliff; a flock of migrating plover pattered along the edge of the sea; and boobies and Man-o'-war-birds came wheeling in fearlessly from their feeding grounds off shore.

For the sea birds it is always springtime at Fernando Noronha. The year is divided into rainy and dry periods, January to July, July to December, respectively, but there is no fixed breeding season, and eggs and young can be found in every month of the twelve. For this reason the isle is a great center and source of avian population; even such maritime species as the bo'sun birds, which spend most of their lives in the remotest parts of the ocean, can here be seen in their cliff-built homes from the year's beginning to its end.

Our volunteer guide had removed his carefully fostered sandals on leaving the rough rock, and now awaited us on the beach. The *Daisy's* cooper and I joined him, the rest of the boat party rowing

off to a reef to fish. The guide, who was informed of our mission, pointed out the nests of the various birds, and captured for us some of the small lizards which scurried over the sand and rock everywhere. He talked glibly in his Brazilian jargon, giving voluminous information concerning the severities inflicted upon the unfortunate exiles. We met a number of his equally unclad fellow prisoners, as well as several pitiful, rheumatic, illiterate boys, children of the convicts, who, like the adults, followed and assisted us for the sake of gathering our empty cartridge shells. Finally the Pernambucan took the cooper on a visit to some of the convicts' *casas*, miserable huts, half-thatched with cocoanut leaves and destitute of furniture. The women, some of them whites of unmixed blood, were almost as sparsely clothed and as woe-begone as the men.

During the absence of my companions I climbed a rough, nearly perpendicular footpath into the woods. Thorn-shrubs, trailing vines, and numerous berry-bearing plants among which the wild doves were feeding, made a fairly dense cover. The "Pinhao" or pink-flowered tree (*Jatropha gossypifolia*) which we had noted from the beach, was leafless although in full blossom, just as on the occasion of Darwin's visit in 1832. I ascended as far as possible up the bare, steep side of the Pyramid. Directly below me lay the long, picturesque beach, with the fleet-winged birds crossing and recrossing it. Not a trace of the work of human hands was in sight. Here was Prospero's isle, cooled by a tireless trade-wind — a land where fruit trees and melons flourish without cultivation, a land which might become a second Bermuda, yet for a hundred years it has been given up to wretched criminals under the callous régime of the Brazilian penal system.

When we joined our fishing party late in the afternoon we found the whaleboat well laden with various brightly-colored tropical fishes and several sharks. The latter had been a great nuisance to the fishermen all day, biting many of the smaller fishes from the hooks before they could be drawn to the surface, and nipping the larger ones clean in half.

As evening drew near we perceived the brig bearing down the coast toward us, and reluctantly we sailed off to join her, leaving the allurements and the misery of Fernando Noronha. At dusk we were running swiftly down the trade wind, the Pyramid behind us still showing faintly through a bluish haze.

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A LIST OF THE BIRDS OF FERNANDO NORONHA.

1. **Oceanites oceanicus** (Kuhl). A few Wilson's Petrels were seen from the whaleboat between our vessel and the shore.

2. **Phaëthon lepturus** (Lacép. & Daudin). *Phaëthon lepturus*, Grant, Cat. B. XXVI, p. 453, Nicoll, *Ibis*, 1904, p. 39.

The Bo'sun Birds were nesting in niches of the cliffs along the beach, and they could be frightened from their eggs only with difficulty. Three breeding females, of which two are typical *lepturus*, were collected. The third specimen represents a phase of the species hitherto apparently undescribed. In this specimen the white feathers are replaced entirely by a plumage of pale pink, or pinkish salmon, slightly orange on the back but less so than in *P. fulvus* of the Indian Ocean. The pattern of light and dark

coloration differs a little from that of the two white birds in that the black on the outermost primary extends to within 23 mm. (.9 in.) of the tip, and on the third from the outermost primary to within 8 mm. of the tip. It differs moreover in its smaller dimensions and in having the culmen horn-colored instead of yellow. Further collection may possibly show that this pink *Phaëthon* is worthy of taxonomic distinction.

Measurements of skins.

	exp. culmen	tarsus	wing	tail
♀ (white)	48	22	265	403
♀ (white)	46.5	23	264	416
♀ (pink)	44	21.5	251	451
An unsexed specimen of <i>P. fulvus</i> in collection of Am. Mus. Nat. Hist.				
	49	23	283	530

3. ***Phaëthon æthereus*** (Linn.). *Phaëthon æthereus*, Sharpe, Journ. Linn. Soc. (Zool.) XX, 1890, p. 480. Grant, Cat. B. XXVI, p. 458.

4. ***Sula leucogaster*** (Bodd.). *Sula leucogastra*, Sharpe, Journ. Linn. Soc. (Zool.) XX, 1890, p. 480. *Sula fusca*, Ridley, Zoölogist, 1888, p. 43.

Boobies of this species were exceedingly abundant at the island. While we were passing to and from shore in the whaleboat, they flew about us closely, and three immature examples were collected.

5. ***Fregata aquila*** (Linn.). *Tachypetes aquila*, Sharpe, Journ. Linn. Soc. (Zool.) XX, 1890, p. 480. Mosely, Notes by a Naturalist on H. M. S. *Challenger*, p. 71.

We found the Frigate Bird abundant. Numbers were seen upon their nests about the summits of the smaller islets.

6. ***Charadrius dominicus*** (Müll.)?

A flock of seven plover, believed to have been of this species, were seen repeatedly along the shore of the inlets. Unlike the native birds these plover were very shy, and I could neither collect one nor approach the flock closely. Fernando Noronha is doubtless a regular station for migrating shore birds, and several of the authors cited above refer to *Limicolæ* at the island.

7. ***Arenaria interpres*** (Linn.). *Strepsilas interpres*, Nicoll, Ibis, 1904, p. 39.

8. ***Sterna fuliginosa*** (Gm.). *Sterna fuliginosa*, Nicoll, Ibis, 1904, p. 39.

9. ***Anous stolidus*** (Linn.). *Anous stolidus*, Saunders, Cat. B. XXV, p. 141. Nicoll, Ibis, 1904, p. 38.

10. ***Micranous leucocapillus*** (Gould). *Anous melanogenys*, Sharpe, Journ. Linn. Soc. (Zool.) XX, 1890, p. 479.

At the time of our visit Noddies of this species far outnumbered all other birds. Six breeding adults were collected. Several are in new, unworn plumage, and have the outermost remex only half grown or less.

Measurements of 5 skins.

	exp. culmen	tarsus	wing	tail
♂	46	23	217	122
♂	47	23	222	117
♂	44	23	222	116
♂	43	22.5	225	118
♀	44	23	218	113

11. ***Gygis crawfordi*** Nicoll. *Gygis candida*, Sharpe, Journ. Linn. Soc. (Zool.) XX, 1890, p. 480. Saunders, Cat. B., XXV, p. 149. *Gygis crawfordi*, Nicoll, Bull. B. O. C., XVI, 1906, p. 102.

Nicoll, Ibis, 1909, p. 669, states, "Probably all examples of the White Tern from the Atlantic are referable to this species, as a glance at the map will show how completely it is isolated. A few pairs breed on Fernando Noronha Island, and it has been also recorded from St. Helena and Ascension as a breeding species."

About twenty examples of this tern were seen, mostly flying in pairs from shelf to shelf of the upper cliffs, or sitting side by side on the boughs of trees. Four breeding birds were collected, one of which was preserved as a skeleton. They agree in general with Nicoll's description, which, however, is not very detailed: — "Similar to *G. candida*, but may be easily distinguished by the following characters. Bill *wholly* black (not *blue* at the base, as in *G. candida*), more slender and narrower at the base; nostril situated much nearer the forehead; wing longer than in *G. candida*; tarsi and toes pale blue, webs white." The species appears also to differ from *G. alba* (= *candida*) in having a heavier ring of black around the eye.

Measurements of skins.

	exp. culmen	tip of bill to nostril	gonys	tarsus	wing	tail
♂	40	27	24.5	14	240	103
♀	41	29	25	15	240	113
♀	41	29	25	14.5	241	115
♀ of <i>G. alba</i> from Japan.	37	26	21.5	14	220	102

The length in inches of the entire culmen of the ♂ from Fernando Noronha is only 1.8 as against "2.1" for the type specimen of *Gygis crawfordi* from Trinidad Islet.

In one ♀ of the Fernando Noronha birds the shafts of the primaries are white; the other two birds have the shafts marked with brownish pigment.

It is interesting to note that this white-feathered bird has a heavily pigmented, coal-black skin, whereas the skin of the black tern, *Micranous*, is white in every part. The dermal melanin of *Gygis* doubtless bears the same relation to the absorption of external heat, or the prevention of radiation of bodily heat, as the black plumage of *Micranous*.

12. ***Zenaida auriculata*** (Temm.). *Zenaida noronha*, Gray, List B. Brit. Mus., 1856, Columbæ, p. 47. *Zenaida maculata*, Sharpe, Proc. Linn. Soc. (Zool.) XX, 1890, p. 479. *Zenaida auriculata*, Salvadori, Cat. B., XXI, p. 384. *Peristera geoffroyi*, Mosely, Notes by a Naturalist, p. 71.

This species is the most abundant land bird at Fernando Noronha. According to Moseley the doves sometimes breed on the ledges with Boobies and Noddies, the nests being intermingled with those of the seabirds.

Of three specimens collected a ♂ and a ♀ were breeding.

Measurements of skins.

	exp. culmen	tarsus	wing	tail
♂	17	25	134	73
♂	17	24	135	80
♀	16.5	24.5	134	76

These figures confirm the statements of Sharpe, l. c., and of Salvadori, Cat. B., XXI, p. 386, that the dimensions of Fernando

Noronha specimens of *Z. auriculata* are somewhat less than those of birds from the South American continent. Probably the form is worthy of subspecific distinction, for according to the astronomer Halley "Turtle Doves" were abundant at Fernando Noronha at the time of his visit in February 1699.

My specimens show three stages of the moult, the sequence of which seems to be as follows:—The inner primaries and central rectrices are first moulted; after the replacement of these by new feathers the remaining quills are lost, primaries 10 and 9 being the last to drop out. The moult of the contour feathers follows that of the quills.

The female dove in the collection is as brightly colored as a male in new plumage.

13. *Elainea ridleyana* Sharpe. *Elainea ridleyana*, Sharpe, Proc. Zool. Soc., 1888, p. 107.

This flycatcher and the following species of *Vireosylva* are endemic.

14. *Vireosylva gracilirostris* (Sharpe). *Vireo gracilirostris* Sharpe, Journ. Linn. Soc. (Zool.) XX, 1890, p. 478.

Many of these greenlets were seen in the fig trees and in the thickets near the beach. A ♂ and a ♀, both breeding birds, were collected. Both were in fresh plumage, some of the body feathers not having lost the sheaths, while the quill feathers show only the slightest signs of wear. The contour feathers of the back measure up to 35 mm. in length.

Measurements of skins.

	exp. culmen	tarsus	wing	tail
♂	16	20.5	64	50
♀	15	21	66	55

In addition to the fourteen species listed above, references are made in several of the works which I have cited to the following birds:—"small plover," "bird resembling a Yellowshank," "sandpiper," "curlew," and "a small species of Albatross."

NOTES ON AMERICAN AND OLD WORLD ENGLISH
SPARROWS.

BY JOHN C. PHILLIPS.

IN the spring of 1911 I undertook to collect skins of *Passer domesticus* from various parts of the United States with the object of studying any possible geographical or climatic effects which the species in its new surroundings might have undergone. For this purpose I communicated with a number of collectors, both professional and amateur (about forty in all) throughout the country, but the answers and especially the number of skins received were by no means encouraging. Many of these men had already gone out of business; others could not kill sparrows in places where these birds were confined to city limits; and still others no doubt thought the pursuit of a few specimens of this inglorious and unremunerative species scarcely worth while.

At the present my collection is stationary, and in these notes I shall simply give the meagre results as far as they have progressed. It is as well to state that although the enquiry was started as a study in variation, it would be better with the data now at hand to call it "A study of the stability of a species under wide-ranging climatic and geographical conditions."

In July, 1911, four hundred and forty-six enquiries were sent to postmasters in the western states in order to get an idea of the distribution of the English Sparrow since the map of Barrows, 1889, and also the length of residence of the species in various western districts. Three hundred and twenty-eight answers were received, and these will be mentioned later.

It is necessary at first to outline the native distribution of *P. domesticus* and its subspecies, giving a brief diagnosis of these as they are described by the latest authority on the Passerine birds of Europe, Hartert's 'Die Vogel der Palearktischen Fauna.' Hartert says that *P. domesticus* is found over all of Europe except Italy, where it is very rare (less so in Friaul and Udine). In Scandinavia beyond the Arctic Circle, all over the British Isles, but not on the Faroes, Madeira, Azores or Canaries. All over Russia and Siberia

to Irkutsk; to Darien in East in cities and villages, (here only since permanent habitation) and not in territory of nomads. In South to Gibraltar, Spain and Portugal, to Tangiers, on Balkan Peninsula, and on Balearic Isles. Also imported to New Zealand and Australia and North America. Male wing 76-82.5; rarely 83 (E. Prussia). He says it was not easy to define the limits of *P. d. indicus*, an eastern race, on account of lack of material and the pronounced variation of *domesticus*, especially in the color of the back, lighter or darker, more or less mixed with white, and also in the size. He was not able to separate any races in Europe, but says more material may give other results.

English, Irish, W. German and Dutch specimens he considers smaller, but there is no definite boundary line. The largest male is from Eastern Prussia. Specimens from S. E. Europe have brighter colors, but nothing constant. Caucasus specimens have grey ear coverts, very pure colors, and look like *P. indicus*, but cannot be separated as a race. Some specimens have fine black cross-bars on lower sides. Spanish spring birds are peculiar because of light colors and chestnut brown on the lesser wing coverts and back. We thus see stability over a very large area, with tendency to certain variation.

The following sub-species are recognized by Hartert:

P. d. biblicus Subspec. nov.: size Wing 82-84; beak as large or larger, back light chestnut brown with no white; grey of rump and head covered in fall with a pale brown tint. Wings and tail not as dark. Ear coverts not white as *indicus*, but light grey with brownish tint. Six specimens. (In the Museum of Comparative Zoölogy I have seen five males from near Jerusalem, Selah Merrill Collic; all of them fall below the measurements given by Hartert except one which equals his smallest — Wing 78-82-77-80-79.) Distribution of this race: Syria, Palestine from Beersheba to Beirut.

P. d. tingitanus Locke: Very much like *P. domesticus* but grey feathers of upper head in the male are black towards base; a fact only noticed in fresh feathers when they are raised up. In spring the worn head feathers look dotted with black; ear coverts not as grey, and lower parts somewhat lighter and cream colored. Rump somewhat lighter and wing a little longer. Females also somewhat lighter and less greyish. Distribution: Tunis and Algiers, Morocco.

Occasionally specimens of pure *domesticus* with head characters of this race are found in Germany.

P. d. ahasver Kleinschmidt: Just like *domesticus*, but a round spot in center of the top of the head is grey, surrounded by a circle of brownish red which protrudes a little over the forehead. Author has only one specimen, so form is not definitely fixed. Distribution: Countries south of Atlas.

P. d. arboreus Bonaparte: A small and lively colored species of *domesticus*. Top of head a rusty brownish grey in fall; in spring a lively reddish, chestnut brown, with very narrow black stripes. In fall we can see light rusty brown feather tips which are soon worn off. Rump and upper tail coverts always show more or less rusty red spots. Wing of the male, 72-74; female only distinguished from *domesticus* by smaller dimensions. Distribution: Nile, Dongola and Berber, south to twelve degrees. Found near Khartoum commonly.

P. d. chephreni Phillips: This race, recently separated by myself (Proc. Biol. Soc. Wash., 1913, p. 167), is like *P. d. indicus* but the cheeks and ear coverts are darker. Hartert noticed this difference but did not separate this bird. Its distribution is the northern Nile Valley.

P. d. indicus Jardine & Selby: Noticeably smaller, Wing 74-78; light head areas pure white; upper ear coverts often of light grey tint and general colors lighter. Distribution: Cochin China, Burma (in Terrasserim South to Moulmein), Ceylon, India, Turkestan, Transcaspia, Persia and So. Arabia. Transcaspian birds are sometimes intermediate to *P. domesticus*.

P. d. pyrrhonotus Blyth: A very small sparrow with a light grey center on the head, small black spot on throat and a chestnut brown lower back. Wing of male, 68-69. Distribution: Sindh (Narra).

Nicoll and Bonhote described another race, *P. d. niloticus* from the desert east of Cairo, which is apparently somewhat like *P. d. arboreus*.

I am not familiar at first hand with these races except *biblicus*, *indicus*, *arboreus* and *chephreni*. *Indicus* is a very strongly marked subspecies and is recognized at a glance, and so is *arboreus*. Some of the other races are less well marked.

Turning now to the series of *Passer domesticus* obtained in 1911, and that already in the collection of the Museum of Comparative Zoölogy, it is well to give a list of the specimens, and to mention some of the individual variations.

Littleton, Colo., May, 1911, ten specimens, four adult males. These four males show rather marked differences in color. Specimen A is an extremely buffy bird with a large amount of rich chestnut on head and neck, and very little black on back. Specimen B is very blackish on the back, with very little buff anywhere. Taken as a whole, this series shows more color variation than any other.

Denver, Colo., winter, 1911-12, F. C. Lincoln, collector, 23 specimens, 12 males. These specimens are more or less soot stained, but two are bright and clean. (This soot staining is easily recognized after it has once been seen.)

Nampa, Idaho, eight skins, two adult males, May and June, 1911. Nothing of note.

Tacoma, Wash., pair, March, 1909. These birds are very dirty, like the London ones.

Blue Rapids, Kans., P. B. Peabody, collector, May, 1911, nine skins, four adult males.

Excelsior, Minn., Albert Lano, collector, eighteen skins, eight adult males, May, 1911. This series presents, I believe, a slight difference in color. The males are very rich red on the post-ocular and neck patch, while the backs are strongly streaked and dark in color. I rather hesitate to mention this, but believe it to be a real fact.

Mount Pleasant, S. C., A. T. Wayne, collector, May, 1911, three adult males.

Warwick Co., Va., H. H. Bailey, collector, May, 1911, Feb., 1912, eighteen skins, fifteen adult males.

Brownsville, Tex., Armstrong, collector, 1889, one pair. The male shows pure white primaries and secondaries on both sides; also some white tail feathers.

Mt. Carmel, Ill., one male, 1878.

Washington, D. C., 1900, one pair.

Sing Sing, N. Y., four skins, two males, 1874-1879.

Princeton, N. J., five skins, three males, 1879.

Boston and vicinity, 1878 to recent date, twenty-four skins.

Boston, 1878, Bangs, collection, two males, Nos. 4746 and 4744.

Both of these specimens show much chestnut on throat and breast, in specimen 4746 practically replacing the black of that region.

Germany, two males, one female.

Roumania, eight males.

Pommern, Prussia, one male, 1871.

England, eighty-six skins, sixty-six males. Many taken near London are very black all over, undoubtedly due to soot. This series shows well the characteristic age differences. The older the bird, the greyer becomes the pileum, the whiter the cheeks and the lighter the abdomen. All the males in immature plumage have an olivaceous pileum, approaching the color of the female pileum.

From the Museum of Vertebrate Zoölogy of the University of California, through the kindness of Mr. Joseph Grinnell, I have had the opportunity of examining the following large series:

Tipton, Tulare Co., Calif., three males, April, 1911. Fine, clean skins.

Berkeley, Calif., eight skins, seven males, 1909-10, except one dated 1892. This series is all soot-colored, especially male 11618 (1892).

Raymond, Madero Co., Calif., one male, April 1911. A very bright clean skin.

Oakland, Alameda Co., Calif., two females, Oct., 1908. One a partial albino, nearly white on dorsum except for primaries and secondaries.

Tower House, Shasta Co., Calif., two males, March, 1911.

Honolulu, Oaha, June and March, 1910, sixteen males and ten females, collected by Miss Alexander. The plumage of this whole series has a very bright and clean look, due perhaps to a clean, showery climate. There appears to be, however, no essential differences either in measurements or color.

As to the size of specimens from various localities, the table (p. 56) will show at a glance all I have been able to learn.

It will also be seen from the table that there is little choice in size either from single localities or grouped localities such as those found in the first part of the table. It is nevertheless apparent that sparrows from England are slightly smaller, a fact pointed out

Loc.	Males				Females & juvenile			
	Wing	Tarsus	Cul.	No. spec- imens	Wing	Tarsus	Cul.	No. spec- imens
England	75	19.4	11.6	66	72	19	11.4	20
Roumania & Germany	76.3	18.8	12	11				
New England	77	19.3	11.8	27	75.5	19.6	11.7	6
West America	76.6	19.4	12.1	30	75.3	19.4	11.8	45
South Atlantic	77.1	19.8	11.8	18	75	19.4	12	5
Littleton, Col.	75.2	18.6	12	4	75.3	19.4	12	6
Nampa, Idaho	77.5	20	13	2	76.1	19.8	10.9	6
Blue Rapids, Kansas	76	19.4	11.8	4	75	19.4	11.5	5
Tacoma, Wash.	76	19	11.5	1	74	20	12	1
Brownsville, Texas	73	17.5	12	1	73	20	10	1
Marshall Co., Kansas					76	18	12.5	1
Mt. Pleasant, S. C.	77.7	19	12.3	3				
Warwick Co., Va.	77	20	11.7	14	75	19.4	12	5
Denver, Col.	78	19.5	11.9	12	75	19	11.8	12
Excelsior, Minn.	76.6	19.4	12.5	6	75.7	19.7	12.1	13

by Hartert and noted above. My series from Denver run large, while those from Littleton, Colo., are small. New England and South Atlantic birds are large, especially three males from Mt. Pleasant, S. C., but all these differences are too slight to be of much significance. No birds as large as Hartert's maximum have been seen.

The series lent by the Museum of Vertebrate Zoölogy was not measured individually.

Townsend and Hardy in 'The Auk' for 1909, p. 78, give some measurements for English birds and for recent and early New England birds. They notice the smaller size of English birds. They also obtained larger measurements for the bills of recent New

England birds than for older ones, 13.18 as against 12.64. I think this result must be accidental, as I have found no specimens with bills as large as 13 mm. It is not necessary to say, perhaps, that observers should be careful in comparing their own measurements with those of others, for methods vary a great deal.

It is not my intention to go into the dispersal of the sparrow in America. The map which I constructed from replies to my postal cards showed that the bird was present in all county seats throughout the entire west which replied to my query, except a few places in northern Idaho, northwestern and northeastern Oregon, northwestern California, and some other scattered localities mostly in Nevada and Arizona. The literature teems with notices of the arrival of the English Sparrow at different places through the west, and a very fair map of its advance during the past twenty years could be constructed from this source. I find two notices which require special mention. In the 'Ottawa Naturalist' for May, 1909, Criddle expresses the opinion that sparrows of eastern Canada migrate in part, and that these migrants breed later than the local birds.

Wood (Wilson Bull., XXIII, p. 103) noted at Charity Isle, Lake Huron, Oct. 8, 1910, a flock of several hundred *P. domesticus*, and another flock seen a few days before. He states that the bird does not breed there. Is it possible that the new environment of the English Sparrow will bring about migratory tendencies? One would not be inclined to attach much importance to isolated flights of sparrows like the above, for they may be due to purely local conditions.

P. domesticus was also introduced about 1885 at Ivigut, Greenland, but the colony was said to be diminishing (Auk, 1889, p. 297). It is present also in Bermuda, Cuba and at Nassau. Specimens from these places and also from the desert towns of southern California would be most interesting for comparison, but I have not so far been able to obtain any.

Bumpus has given us two papers on variation in the English Sparrow which should be mentioned, because the second of these, 'The Elimination of the Unfit as Illustrated by the Introduced Sparrow,' (Biol. lectures, 1898) has been quoted as an instance of natural selection in active operation. Bumpus' paper is of great

interest to ornithologists. Briefly, he examined by careful measurements, 138 sparrows which were picked up during a severe storm in February, 1898. 72 of these birds revived while 64 perished. Those birds which perished showed certain constant differences which held through the three following groups, adult male, young males, and females. These differences tend to show that the surviving birds are shorter, weigh less, have longer wing bones, longer legs, longer sternums and greater brain capacity. Some of these differences are very slight and some of the measurements are not the ones that ornithologists might pick out, e. g., alar extent and total length; but there seems to be no questioning the fact that the data point to a real difference in the two classes of birds. Even of greater interest are the figures brought forward in regard to extent of variation in these same birds. Those individuals with any marked tendency towards maximum and minimum measurements nearly always fall into the "perished" class, and as a group the "survivors" are more uniform and conform more closely to the ideal species mean.

J. A. Harris in the 'American Naturalist' for May, 1911, treated Bumpus' figures from a biometrical standpoint and came to the conclusion that they had a real significance. J. A. Allen also reviewed this paper in 'The Auk.'

In an earlier paper, (Biol. Lectures, 1898) Bumpus reported the study of 1736 sparrow eggs, one half English and the other half American. This large series showed that the American eggs had become shorter, more spherical, and much more variable in color and pattern, and the conclusion is reached that American birds have been subject to a slightly changed and perhaps less selective environment.

It has been stated that albinism in the house sparrow is more common here than in the old world, but I do not find any comparative figures.

We might expect that an imported species with a successful history like the sparrow would show an increase of variability in form and color. A well known example of this phenomenon is the land snail. *Helix nemoralis* which introduced from Europe produced in a short time a large number of varieties unknown in its home. Another case is the snail, *Littornia littoria*, which in its

new environment (America) took on a greatly increased variability of size.

All we can say in conclusion is that the English Sparrow has changed very little in outward appearance and gross measurements during his sojourn in America. A careful study of a large series in the flesh would probably give results of interest, and perhaps demonstrate an increased variability in American specimens. I should like to add that sparrow skins from the southwest, from Cuba, Bermuda or other isolated points will be most gratefully appreciated by the writer.

A NEW SUBSPECIES OF SCREECH OWL FROM CALIFORNIA.

BY J. GRINNELL.

(Contribution from the Museum of Vertebrate Zoölogy of the University of California.)

MATERIAL representing the genus *Otus* has been very slow in accumulating from California. For some years local systematic workers have been of the opinion that two races exist in the region west of the desert divides, both being included in the literature under the name *bendirei*. The present writer is at last fortunate in having access to a sufficient series of skins to enable him to arrive at conclusions; and he is convinced of the desirability of recognizing the two races under separate names, though the series is at the same time inadequate for working out properly their respective geographic ranges. The material for study has been brought together from the Morcom, Swarth, Grinnell and Mailliard collections, and from the California Museum of Vertebrate Zoölogy. The latter institution has recently acquired some northern coast Screech Owls of particular value in the present connection.

The two forms here separated belong to the humid coast belt of California, and to the more arid southern and interior parts of the same state, respectively. Since *Scops* [= *Otus*] *asio bendirei* was described (Brewster, Bull. Nutt. Orn. Club, VII, January, 1882, p.

31) from Nicasio, Marin County, which is situated in the northern humid coast belt, it remains to name the southern race.

***Otus asio quercinus*, new subspecies.**

TYPE.— Male adult, no. 5678, coll. J. G.; Pasadena, Los Angeles County California; April 21, 1904; collected by J. Grinnell.

DIAGNOSIS.— Characters in general like *Otus asio bendirei* (see Brewster, l. c.); differs in paler coloration: Light drab or ashy rather than hazel tones prevail dorsally, while beneath the black markings are sharper in outline, with very little or none of the ferruginous marginings. The restriction or absence of ferruginous on the chest, around the facial rim, and on the ear-tufts, is a good character.

GEOGRAPHICAL DISTRIBUTION.— Records of Screech Owls are well distributed over California west and north of the southeastern deserts, from the Mexican line nearly to the Oregon line. In absence of specimens from most of this area, however, it is impossible to fix the boundary lines accurately or to designate the strips of country where intergradation occurs. These can only be inferred, in a general way, from the behavior of better known groups of birds. The material at hand divides up as follows: *Otus asio bendirei*: Guerneville, Sonoma County, 1; Freestone, Sonoma County, 1; Santa Rosa, Sonoma County, 1; San Geronimo, Marin County, 3; Nicasio, Marin County, 1; Oakland, Alameda County, 1; Walnut Creek, Contra Costa County, 4; Palo Alto, Santa Clara County, 2. *Otus asio quercinus*: west slope Walker Pass, Kern County, 2; Bodfish, Kern County, 5; vicinity of Santa Monica, Los Angeles County, 2; vicinity of Los Angeles, 2; vicinity of Pasadena, 7; Mount Wilson, Los Angeles County, 1; Cuyamaca Mountains, San Diego County, 1.

REMARKS.— Birds from the coast belt north of San Francisco Bay are most typical of the race *bendirei* as here restricted. Specimens from Palo Alto, Santa Clara County, and Walnut Creek, Contra Costa County, show more or less departure towards *quercinus*. The palest examples of the latter form are from Walker Pass, Kern County; but there is still plenty of difference between these and *Otus asio gilmani*, of the Colorado River valley. The darkest winter examples of *quercinus*, from Los Angeles County, are darker than Palo Alto skins; but this darkness consists in extension of black and not in a pervasion of warm browns as in Marin and Sonoma County *bendirei*. The latter undoubtedly approach closely to *Otus asio brewsteri*, recently described by Ridgway (Birds N. and Mid. Amer., vi, 1914, p. 700). I have a topotype of the latter, from Salem, Oregon. This specimen is larger than average *bendirei* and is decidedly more pervaded with ferruginous tints on the posterior lower surface. There is thus a series of intergrading forms along the Pacific coast, with *Otus asio kennicottii* at the extreme north, succeeded towards the south by *brewsteri*, *bendirei* and *quercinus*. Of these, so far as yet known, only the latter two occur within the state. The form *gilmani* is distinct, there being no evidence of intergradation between it and *quercinus*.

EARLY RECORDS OF THE WILD TURKEY. III.

BY ALBERT HAZEN WRIGHT.

THE following notes are classified according to political divisions and are arranged in chronological order.

Canada.

The Turkey was not a widely distributed bird in Canada and most of the Jesuit records are outside its confines. In their first note they speak of it in a mythical way. They recount how an Indian chief of the Tobacco Nation supposedly holds thunder in his hand. "This thunder is, by his account, a man like a Turkey-cock."¹ In another way, it enters the repertorie of the medicine men. One² "carried a Turkey's wing, with which he fanned them gravely and at a distance, after having given them something to drink." To his disciples or substitutes, "as a token — he left them each a Turkey's wing, adding that henceforth their dreams would prove true." About Lake Erie (1640),³ "They have also multitudes of wild turkeys, which go in flocks through the fields and woods." One hundred years later (1749) in this same region Bonnacamp says,⁴ "It is at this lake that I saw for the first time the wild turkeys. They differ in no way from our domestic turkeys."

In the Niagara country, Hennepin, in 1698,⁵ "saw great numbers of — Wild Turkey-Cocks." Between Lakes Erie and Huron "Turkey Cocks — are there also very common." And finally, in his "Continuation of the New Discovery (p. 130)," he writes "There are to be had — Turkies, which are of an extraordinary bigness." Following Hennepin, comes Baron LaHontan (1703) who

¹ Thwaites, R. G. *The Jesuit Relations and Other Allied Documents.* 1610-1791. Vol. X, Le Jeune's Relation, 1636, p. 195.

² *ibid.*, Vol. XIII (1637), p. 241, 243.

³ *ibid.*, Vol. XXI (1640-1641), p. 197.

⁴ *ibid.*, Vol. LXIX (1710-1756), p. 161.

⁵ Hennepin, L. *A New Discovery of a Vast Country in America, etc.* London, 1698, pp. 40, 63.

notes along the north coast of Lake Erie,¹ "the great numbers of Turkeys, that we were obliged to eat upon the Spot, for fear that the heat of the Season would spoil 'em." "Upon the brink of this Lake we frequently saw flocks of fifty or sixty Turkey's, which run incredibly fast upon the Sands; And the Savages of our Company kill'd great numbers of 'em, which they gave to us in exchange for the Fish that we catch'd" Finally, in his list of the birds for the South Countries of Canada, he includes the Turkey. In 1760, T. Jefferys writes that² "turkies . . . are found (in Canada),—except in the neighbourhood of plantations, where they never come." "The History of North America, London, 1776" credits (p. 235) Canada with "a great number of . . . turkeys . . ." In 1807, Heriot finds "The birds of the southern parts of Canada are . . . turkeys, . . ."³ In 1820, Sansom gives among⁴ "the feathered game, with which these woods and waters abound in their season, . . . wild geese, . . . wild turkies." Fifteen years later, Shireff states that⁵ "The turkey is found only in the western district (of Canada) in limited numbers." "The turkey is said to inhabit this district (near the Detroit River) in considerable numbers, and the boy who conducted us out of Chatham plains told me he had come on a hen and her brood a short time before, but this bird was not seen by me." In Canada, Godley says⁶ "The only birds which remain all the winter—in the west (are) a few wild turkeys." At Amherstburgh, Canada, "you have . . . wild turkeys." Finally, in 1851, Smith (l. c., Vol. II, p. 405) writes of this form as follows: "In addition to these, we have the Wild Turkey, which, however, is confined to the southwest of the Province; . . . The Wild Turkey, although the stock from whence our English domestic Turkey sprang, is rather difficult to tame, even when taken young from the nest, or reared from the eggs, under the fostering care of the domestic hen; and unless closely watched, they are apt to

¹ LaHontan, Baron. *New Voyages to North America*. London 1703. Vol. I, pp. 99, 82, 83; Vol. II, p. 237.

² Jefferys, T. *The Natural and Civil History of the French Dominions in North and South America*. London, 1760. Part I, p. 39.

³ Heriot, George. *Travels through the Canadas, etc.* London, 1807, p. 516.

⁴ Sansom, Joseph. *Travel in Lower Canada, . . .* London, 1820, p. 49.

⁵ Shireff, P. *A Tour of North America; . . .* Edinburgh. 1835, pp. 390, 214.

⁶ Godley, J. R. *Letters from America, . . .* 2 vols., London, 1844. Vol. I, pp. 247, 248.

make their escape, and take to the woods in the following spring. The Turkey is naturally a very stupid bird."

New England.

In New England, most of the records precede 1800. The first note of this region is incidental in its allusion to the turkey. In "The Relation of Captain Gosnold's Voyage to the North part of Virginia" Gabriel Archer writes that on May 18, 1602,¹ "one of them (Indians) had his face painted over and head stuck with feathers in the manner of a turkey cock's train." The first note of real interest is Champlain's surmise of its occurrence in New England. In the voyage of 1604 we have the following:² "The savages, along all these coasts where we have been, say that other birds, which are very large, come along when their corn is ripe. They imitated for us their cry, which resembles that of the turkey. They showed us their feathers in several places, with which they feather their arrows, and which they put on their heads for decoration; and also a kind of hair which they have under the throat like those we have in France, and they say that a red crest falls over upon the beak. According to their description, they are as large as a bustard, which is a kind of goose, having the neck longer and twice as large as with us. All these indications led us to conclude that they were turkeys. We should have been very glad to see some of these birds, as well as their feathers, for the sake of greater certainty. Before seeing their feathers, and the little bunch of hair which they have under the throat, and hearing their cry imitated, I should have thought that they were certain birds like turkeys, which are found in some places in Peru, along the sea-shore, eating carrion and other dead things like crows. But these are not so large; nor do they have so long a bill, or a cry like that of real turkeys; nor are they good to eat like those which the Indians say come in flocks in summer, and at the beginning of winter go away to warmer countries, their natural dwelling-place."

In "A Description of New England (1616)" John Smith notes

¹ Mass. Hist. Soc. Colls. Third Series. Vol. VIII, 1843, p. 75.

² The Prince Society, The Publications of. Vol. 12, 1878, Boston, pp. 88, 89.

turkeys. In his "New England Trialls, 2nd edit. 1622"¹ he holds "no place hath more goose-berries and strawberries, nor better Timber of all sorts you have in England, doth cover the Land, that afford beasts of divers sorts and great flocks of Turkies, . . ." In his "A Brief Relation of the Discovery and Plantation of New England. London 1622" he says,² "The country aboundeth with diversity of wild fowls as Turkies, . . ." In his "History of the Plymouth Plantation", Wm. Bradford, the second governor of the colony writes³ "besides water fowle, ther was great store of wild Turkies of which they took many" in the fall of 1621. In "New Englands Plantation, London, 1630" Francis Higginson says⁴ "Here are likewise abundance of Turkies often killed in the Woods, farre greater then our English Turkies, and exceeding fat, sweet and fleshy, for here they have abundance of feeding all the yeere long, as Strawberries, in Summer all places are full of them and all manner of Berries and Fruits."

In 1632, the well known "New English Canaan" by Thomas Morton appears.⁵ "Turkies there are, which divers times in great flocks have sallied by our doores; and then a gunne (being commonly in redinesse), salutes them with such a courtesie, as makes them take a turne in the Cooke roome. They daunce by the doore so well. Of these there hath bin killed that have weighed forty eight pounds a peece. They are by mainy degrees sweeter then the tame Turkies of England, feede them how you can. I had a Salvage who hath taken out his boy in a morning, and they have brought home their loades about noone. I have asked them what number they found in the woods, who have answered Neent Metawna, which is a thousand that day; the plenty of them is such in those parts. They are easily killed at rooste, because the one being killed, the other sit fast neverthesse, and this is no bad commodity." "They make likewise some Coates of the Feathers of Turkies, which they weave together with twine of their owne makinge, very pritily:"

¹ Force, Peter. *Tracts Relating to America*. Vol. II, Washington, 1838, pp. 16, 14.

² Prince Soc. Publ. Vol. 18, 1890, p. 230 (orig. p. 26).

³ Mass. Hist. Soc. Colls. Fourth Ser. Vol. III, 1856, p. 105.

⁴ Force, P. Vol. I (1836), p. 10.

⁵ Force, P. Vol. II, pp. 48, 22.

Two years later, 1634, William Wood publishes in London his "New Englands Prospect" in which appears this curious and interesting statement.¹ "The Turkey is a very large Bird, of a blacke colour, yet white in flesh; much bigger than our *English* Turkey. He hath the use of his long legs so ready, that he can runne as fast as a Dogge, and flye as well as a Goose: of these sometimes there will be forty, three score, and a hundred in a flocke, sometimes more and sometimes lesse; their feeding is Acornes, Hawes, and Berries, some of them get a haunt to frequent our *English* corne; In winter when the Snow covers the ground they resort to the Seashore to look for Shrimps, and such smal Fishes at low tides. Such as love Turkie hunting, must follow it in winter after a new falne Snow, when hee may follow them by ther tracts; some have killed ten or a dozen in halfe a day; if they can be found towards an evening and watched where they peirch, if one come about ten or eleaven of the clocke he may shoote as often as he will, they will sit unless they be slenderly wounded. These Turkies remain all the yeare long, the price of a good Turkie cocke is foure shillings; and he is well worth it, for he may be in weight forty pound; a Hen two shillings." In 1643, Roger Williams in his "Key into the Language of America" gives us two notes: The turkey is called² "neyhom." "They (Indians) lay nets on shore, and catch many fowls upon the plains, and feeding under oaks upon acorns, as geese, turkies. . . ." The other statement refers to "Neyhommaushunck: a coat or mantle, curiously made of the fairest feathers of their Neyhommauog, or *turkies*, which commonly their old men make, and is with them as velvet with us." In "Good News from New England. London 1648" we find³ "The Turkies . . . and their young ones tracing passe." In 1649, John Winthrop publishes his "History of New England from 1630 to 1649," and on Oct. 31, 1632, he speaks of a party who⁴ "came, that evening, to Wessaguscus, where they were bountifully entertained, as before with store of turkeys. . . ."

¹ Prince Soc. Publ. Vol. I, 1865, p. 32.

² Mass. Hist. Soc. Colls. First Series. Vol. III. Reprint 1810, Boston, pp. 219, 225.

³ Mass. Hist. Soc. Colls. 4th Series. Vol. I, p. 202.

⁴ Winthrop, John. History of New England . . . Edited by James Savage 2 vols., Boston, 1825. Vol. I, p. 93.

John Josslyn Gent, already well introduced to ornithologists, in 1675 presents a strange account.¹ "The Turkie, which is in *New England* a very large Bird, they breed twice or thrice in a year, if you would perceive the young Chickens alive, you must give them no water, for if they come to have their fill of water they will drop away strangely, and you will never be able to rear any of them: they are excellent meat, especially a *Turkie Capon* beyond that, for which Eight shillings was given, their Eggs are very wholesome and restore decayed nature exceedingly. But the *French* say they breed the Leprosie; the Indesses make Coats of *Turkie* feathers woven for their Children." Not long after, 1680, Wm. Hubbard in a "General History of New England" lists² "Turkies" among the birds of the region. In 1686, John Dutton in "Letters Written from New England, London 1705" speaks of the coat of turkey feathers.³ "Within this Coat or Skin they creep very contentedly, by day or night in the House or in the Woods, and sleep soundly too, counting it a great happiness that every Man is content with his skin." The following year, 1687, Richard Blome alludes to this garment as follows:⁴ The New England Indians "weave curious Coats with *Turkey* feathers for their Children etc."

In the first part of the next century, we have little appertaining to the New England turkey. In 1720, Neal states that⁵ "D. C. Mather (Phil. Transactions XXIX, p. 64) says, they have wild Turkies of 50 or 60 Pound Weight, . . ." In 1741, Oldmixon, holds⁶ "there's hardly greater Variety and Plenty of Fowl anywhere than in *New England*, as Turkies. . . ." In travels made 1759 and 1760, Andrew Bernaby finds⁷ "The forests abound with plenty of game of various kinds; hares, turkies, . . ." and includes it in his catalogue of birds as "Wild Turkey Gallo Pavo Sylvestris." In 1760, Paul Coffin "saw wild Turkey's Feathers here and there" near

¹ Mass. Hist. Soc. Colls. Third Series. III, 1833, p. 277 (orig. p. 99).

² Mass. Hist. Soc. Colls. Second Series. V, 1817, p. 25.

³ Prince Soc. Publ. Vol. IV, 1867, pp. 224, 225.

⁴ Blome, Richard. The Present State of His Majesties Isles and Territories in America, etc. London, 1687, p. 235.

⁵ Neal, Daniel. The History of New England. London, 1720, Vol. II, p. 572.

⁶ Oldmixon, J. The British Empire in America. 2nd edit. London, 1741. Vol. I, p. 186.

⁷ Bernaby, Rev. Andrew. Travels, etc. 3rd edit. London, 1798, pp. 13, 127.

New Haven.¹ Ten years later, 1770, Wynne claims² "New England produces a great variety of fowls; such as. . . turkies. . ." In 1782, Rev. Samuel Peters (*A General History of Connecticut*, 1782, p. 255) gives turkeys among the feathered tribe in Connecticut. Belknap 1792, in N. H. says³ "Wild Turkeys were formerly very numerous. In winter they frequented the seashore, for the sake of picking small fishes and marine insects which the tide leaves on the flats. . . . They are now retired to the inland mountainous country." In 1819, Warden repeats the same for N. H. Williams, in his "History of Vermont", just mentions (p. 120) the "Wild Turkey, Meleagris gallopavo." Writing in 1807-1808, Edward A. Kendall, says the Turkey Mountains, (Connecticut)⁴ "have their name from the flocks of wild turkeys by which they were formerly frequented, but of which none are at present seen." In New England, Timothy Dwight records,⁵ "Turkies" among "the Land Birds principally coveted at the tables of luxury. The *Wild Turkey* is very large, and very fine: much larger and much finer, than those which are tame. They are, however, greatly lessened in their numbers, and in the most populous parts of the country are not very often seen." Lastly, in 1842, Zadock Thompson writes of it as follows:⁶ "The Wild Turkey. Meleagris gallopavo. The Wild Turkey, which was formerly common throughout our whole country, has everywhere diminished with the advancement of the settlements, and is now becoming exceedingly rare in all parts of New England, and indeed in all the eastern parts of the United States. A few of them, however, continue still to visit and breed upon the mountains in the southern part of the state. The Domestic Turkey sprung from this species, and was sent from Mexico to Spain in the 16th century. It was introduced into England in 1524, and into France and other parts of Europe about the same time."

¹ Colls. Me. Hist. Soc. First Series. Vol. IV, p. 264.

² Wynne, J. H. *A General History of the British Empire in America*; etc. 2 vols. London, 1770, vol. I, p. 41.

³ Belknap, J., l. c. Vol. III, p. 170.

⁴ Kendall, Edward A. *Travels through the Northern Parts of the United States in the Years 1807 and 1808*. 3 vols. N. Y. 1809. Vol. I, p. 219.

⁵ Dwight, Timothy. *Travels; in New England and New York*. 4 vols. New Haven, 1821-22. Vol. I, p. 55.

⁶ Thompson, Zadock. *History of Vermont, Natural Civil and Statistical*. Burlington, 1842, p. 101.

New York.

Most of the notes come in the seventeenth century in the "Narratives of New Netherlands." They begin with John de Laet's "The New World" in which (1625) he says that ¹ "In winter superior turkey cocks are taken; they are very fat, and their flesh is of the best quality." In 1628, a letter of Isaac de Rasieres to Samuel Blommaert recounts how ² "some (Indians have) a covering made of turkey feathers which they understand how to knit together very oddly, with small strings." In a "Narrative of a Journey into the Mohawk and Oneida Country, 1634-1635" the travellers ³ "went out to shoot turkeys with the chief, but could not get any. In the evening I bought a very fat one for two hands of seewan. The chief cooked it for us and the grease he mixed with our beans and maize." In the Vocabulary of the Moquas, "Schawari wane" is "Turkeys." In 1633-1643, David Pietersz De Vries finds the New Netherlands ⁴ "a beautiful place for hunting deer, wild turkeys, . . ." Again he writes, "I returned home and on my way shot a wild turkey weighing over thirty pounds, and brought it along with me." Of the Indians, he remarks that "They . . . wear coats of turkey's feathers, which they know how to plait together." He discovers that "Land birds are also very numerous, such as wild turkeys, which weigh from thirty to thirty-six and forty pounds, and which fly wild, for they can fly one or two thousand paces, and then fall down, tired from flying, when they are taken by the savages with their hands, who also shoot them with bows and arrows." The same author when at Wyngaert's Kill ⁵ "Went out daily, while here, to shoot. Shot many wild turkeys, weighing from thirty to thirty six pounds. Their great size and very fine flavour are surprising." In the year 1639, "They also had this year, great numbers of Turkeys."

A "Journal of New Netherlands, 1647" gives ⁶ "The birds which

¹ N. Y. Hist. Soc. Colls. Vol. I, 1841, p. 311.

² Narratives of New Netherlands, N. Y. 1909, pp. 106, 115.

³ Ibid., pp. 141, 142, 158.

⁴ Ibid., pp. 209, 215, 217, 221.

⁵ N. Y. Hist. Soc. Colls. New Series. Vol. III, 1857, pp. 28, 37, 90.

⁶ Narratives of New Netherlands, N. Y. 1909, p. 270.

are natural to the country are turkeys like ours, . . .” The Indians “go almost naked except a lap . . . and on the shoulders a deer-skin or a mantle, a fathom square, of woven Turkey feathers . . .” In 1644, Johannes Megalopensis in “A Short Sketch of the Mohawk Indians” says ¹ “There are also many turkies as large as in Holland but in some years less than in others. The year before (1641) I came here there were so many turkies and deer that came to the houses and hog pens to feed and were taken by the Indians with so little trouble. In “The Representation of New Netherland, 1650” by Adrian van der Donck we find ² “The other birds found in this country are turkies, the same as in the Netherlands, but they are wild, and are plentiest and best in winter.” and “others (Indians) have coats made of . . . turkey’s feathers.” The same gentleman in “A Description of the New Netherlands, Amsterdam 1656” calls ³ “The most important fowl of the country, . . . the wild turkey. They resemble the tame turkeys of the Netherlands. Those birds are common in the woods all over the country, and are found in large flocks, from twenty to forty in a flock. They are large, heavy fat and fine, weighing from twenty to thirty pounds each, and I have heard of one that weighed thirty two pounds. When they are well cleaned and roasted on a spit, then they are excellent, and differ little in taste from the tame turkeys; but the epicures prefer the wild kind. They are best in the fall of the year, when the Indians will usually sell a turkey for ten stivers, and with the Christians the common price is a daelder each.”

In the “Voyages Of Peter Esprit Radisson” we find that when in the Iroquois country (1653) he kills ⁴ “stagges and a great many Tourquies.” In 1670, Daniel Denton in “A Brief Description of New York” says ⁵ “Wild Fowl there is great store of as Turkies . . .,” and writes that the settler “besides the pleasure in Hunting, . . . may furnish his house with excellent fat Venison, Turkies . . .” Montanus in his “Description of New Netherlands 1671” finds ⁶

¹ N. Y. Hist. Soc. Colls. N. S. Vol. IV, 1857, p. 150.

² Narratives of New Netherlands. pp. 297, 301.

³ N. Y. H. S. Colls. N. S. 1841, Vol. I, p. 172.

⁴ Prince Soc. Publ. 1885, Vol. 16, p. 66.

⁵ Bull. Hist. Soc. Pa. Vol. I, 1845-47, pp. 6, 15.

⁶ Doc. Hist. State New York. Vol. IV, 1851, pp. 118, 125.

"turkeys . . . are, also easily obtained." "this country particularly abounds in turkeys whose number excites no less admiration than their rich flavour and their large size; for they go together in flocks of thirty and forty; they weigh some thirty or more pounds; they are shot or are caught with a bait concealing the hook." The last note in this century is by Jasper Dankers and Peter Sluyter. In the fall of 1679, they ¹ "had to go along the shore, finding some fine creeks well provided with wild turkeys." Again they "were . . . served with wild turkey, which was also fat and of a good flavour."

At the time of the French and Indian War we have two notes. In the "Journal of Gen Rufus Putnam kept in Northern New York, . . . 1757-1760" he states ² that "on our march in this river (near Dutch Hoosack) this day (Feb. 4, 1758) Capt. Learned killed two turkeys." On the following day, they "killed another turkey . . . which we spared for necessity. We encamped this night with sad hearts and the countenance of every man shewed he was perplexed in mind, in consideration that the turkey was the chief of the provision that we had." In Hugh Gibson's Captivity among the Delaware Indians, July 1756-Apr. 1759, we find that his captors when near Painted Post ³ "killed one turkey." Twenty years later, 1779, two other captives, John and Robert Brice, report that in their journey to Canada the Indians killed plenty of turkeys from Unadilla River to Chemung and Genesee Rivers.⁴ In the time of Tom Quick, the Indian Slayer, or in the latter part of the 18th century, we find that ⁵ "the wild turkey, from which Callicoon (N. Y.) derives its name had not yet fled, like the aborigine, to a more solitary and secure retreat." The Stockbridge Indian country in 1804 is said to have ⁶ "Of the feathered kinds, turkies." The same year, Robert Munro in his Description of the Genesee country gives the turkey among the great variety of birds for game in this fertile region.⁷

¹ Journal of a Voyage to New York and a Tour in Several of the American Colonies in 1679-80. Transl. by H. C. Murphy. Brooklyn, 1867, pp. 123, 145.

² Journal, etc. Edited by E. C. Dawes. Albany, N. Y., 1886, p. 53.

³ Mass. Hist. Soc. Colls. Third Series. Vol. VI, p. 147.

⁴ Priest, Jos. Stories of the Revolution. Albany, 1838, p. 5.

⁵ Tom Quick the Indian Slayer, . . . Monticello, N. Y., 1851, p. 225.

⁶ Mass. Hist. Soc. Colls. 1804. Vol. IX, p. 99.

⁷ Doc. Hist. New York. Vol. II, 1849, p. 1174 (8vo edition).

Pennsylvania, New Jersey and Delaware.

The first note discovered comes in 1634, when Capt. Thomas Yong, in his "Voyage to Virginia and Delaware Bay and R.," records¹ "an infinite number of . . . turkeys," in the latter region. Fourteen years later, 1648, in "A Description of the Province of New Albion" Beauchamp Plantagenet describes² "The uplands (as) covered many moneths with berries, roots chestnuts, walnuts, Birch and Oak Mast to feed them, Hogges and Turkeys, 500 in a flock, . . ." He repeats the same in several places and finds that "Here the Soldier, and Gentlemen wanting employment, . . . with five hundred Turkeys in a flock got by nets, in stalling get five shil a day at least." In 1680, Mahlon Stacy writing to his brother Revell says³ "We have . . . of . . . fowls, plenty, as . . . turkies." Three years later, "A Letter from William Penn" holds that⁴ "Of the fowl of the land, there is the turkey, (Forty and fifty pounds weight) which is very great." The same year, a letter from Pennsylvania by Thomas Paskel mentions that⁵ "There are here very great quantities of birds . . . Turkeys (Cocqs d'Inde) . . . (I have bought) for two or three pounds of shot apiece." The following year, 1684, "A Collection of Various Pieces concerning Pennsylvania," has it that⁶ "The woods are supplied with a quantity of wild birds, as turkeys of an extraordinary size, . . ." About the same time, Pastorius writes⁷ "There is, besides a great abundance of wild geese, . . . turkeys, . . ." "When he first came into the country, an Indian promised for a certain price to bring him a wild turkey, but instead of that he brought him a snake, and wanted to persuade him that it was a real turkey." Towards the close of this century, Gabriel Thomas mentions among the fowl of⁸ "Sus-

¹ Mass. Hist. Soc. Colls. Fourth Series, 1871. Vol. IX, p. 130.

² Force, P. Vol. II, pp. 20, 27, 32, 34, 12.

³ Raum, J. O. History of New Jersey. Phila., 1877, Vol. I, p. 109.

⁴ Proud, Robert. The History of Pennsylvania, etc. Vol. I, 1797, p. 250.

⁵ Penn. Mag. Hist. and Blog. Vol. VI, p. 326.

⁶ *ibid.*, p. 313.

⁷ Memoirs Hist. Soc. Penn. Vol. IV, 1840, p. 91 (Part II); III, p. 117.

⁸ Thomas, Gabriel. An Historical and Geographic Account of Pensilvania; and of West-New Jersey in America. London, 1698. New York, 1848, edit., pp. 13, 22.

kahanah" "Turkies (Of Forty of Fifty Pound Weight)," and lists them "among the Land-Fowl."

Four years later in the next century, 1702, Holm finds¹ "of birds and fowls, there are . . . turkeys, . . ." The same year, Rev. Andreas Sandel tells a funny story of a fox mistaking a hidden man for a turkey.² In a "Journey from Pennsylvania to Onondaga," Conrad Weiser (1737) remarks³ the presence of turkeys along the trip. Six years later, 1743, John Bartram on a similar journey on⁴ "The 4th (July 1743), set out before day, and stopp'd at Marcus Hulin's by Manatony; then crossed Skuykill, and rode along the west side over rich bottoms, after which we ascended the *Flying Hill*, (so called from the great number of Wild Turkeys that used to fly from them to the plains)." In 1748 (November), Kalm finds⁵ "The *wild* Turkeys, . . . were in flocks in the woods." In a "General State of Pennsylvania between the years 1760 and 1770"⁶ occurs this significant statement: "wild turkeys, among the winged tribe, were formerly very plentiful, but now scarce." In 1765 we find that Samuel Smith's "Nova-Caesaria or New Jersey" holds that⁷ "Of these birds there are great plenty: as the wild turkey, . . ." During the Sullivan expedition, Lieutenant Wm. Barton when at Tunkhannock, Pa., (July 3, 1779) finds⁸ "This place very remarkable for deer . . . turkeys, several of which were taken by the troops without firing a single gun, there being positive orders to the contrary: otherwise might have killed many more during our halt." In 1788, John Ettwein in his "Remarks upon the Traditions etc. of the Indians of North America" says⁹ "Of that hemp (wild hemp) they made Twine to knit the Feathers of Turkeys, . . . into Blankets." In "Indian Names of Rivers, Streams, etc." by Maurice C. Jones, Kenzua Cr. Kenjua Cr. (Kentschuak) is said to

¹ Memoirs Hist. Soc. Penn. Vol. III, 1834, pp. 41, 117.

² Penn. Mag. Hist. and Blog. Vol. XXX, p. 290.

³ Penn. Hist. Soc. Colls. Phila. 1853, Vol. I, p. 22.

⁴ Observations Made by Mr. John Bartram, etc. London, 1754, p. 9.

⁵ Kalm, Peter. Travels, etc. Transl. by J. R. Forster. Warrington, 1770, Vol. I, p. 290.

⁶ Proud, R. *ibid.*, Vol. II, p. 263.

⁷ Smith, Samuel. The History of the Colony of Nova-Caesaria or New Jersey. Burlington, N. J., 1765. 2nd. edit. 1877, p. 511.

⁸ N. J. Hist. Soc. Proc. Vol. 2, p. 26.

⁹ Bull. Hist. Soc. Penn. Vol. I, 1845-1847, p. 32.

mean ¹ "They gobble (viz wild turkies) The gobbling reply which the turkey cock makes to the call of the hen. The place which bears the name must have been a favorite place of the turkies." Of "Chiknicomika. Chikenecomike or Tschikenumik" it says "Place of turkies, where turkies are plenty." In another place, it appears "Chickahominy Chikamawhomy (Eng. idiom) Turkey lick. Tschikenemahoni (German idiom) Turkey lick, or the lick at which the turkies are so plenty. I know several places bearing this name for the same reasons. These turkies go there to drink," Of this form in Pennsylvania, William Bartram (l. c. pp. 286, 290) writes, "These breed and continue the year round in Pennsylvania."

In the nineteenth century, we have more notes for Pennsylvania than for N. Y. or N. E. and doubtless the species held its own longer in this state. Thaddeus Mason Harris in 1803, when he reaches Laurel Hill, notes that ² "For more than fifty miles, to the west and north, the mountains were burning. This is done by hunters, who set fire to the dry leaves and decayed fallen timber in the vallies, in order to thin the undergrowth, that they may traverse the woods with more ease in the pursuit of game. But they defeat their own object: for the fires . . . destroy the turkies . . . , at this season on their nests, or just leading out their broods." In 1804 (Dec. 20), Robert Sutcliffe ³ "came this day to Jersey town where I slept. In passing through the woods this afternoon I saw a flock of wild turkeys running along the ground." In an "Account of Buckingham and Solebury, Penn. 1806," Watson remarks ⁴ "Deer, turkeys and other small game made a plenty supply of excellent provision in their season." In 1810, F. Cuming (l. c. p. 37) finds that wild turkeys "abounds on these mountains" about Strasburg. In the same year, Christian Schultz publishes his "Travels." He says, ⁵ "I had never seen a wild turkey before I descended this river (Alleghany), where I had an opportunity of shooting a great many.

¹ *ibid.*, Vol. I, pp. 127, 140, 141.

² Harris, T. M. *The Journal of a Tour into the Territory Northwest of the Alleghany Mountains. Made in the Spring of the Year 1803.* Boston, 1805, pp. 22, 23.

³ Sutcliffe, R. *Travels in Some Parts of North America, in the Years 1804, 1805, and 1806.* Phila., 1812, p. 170.

⁴ *Mem. Hist. Soc. Penn.* Vol. I, 1826, p. 303.

⁵ Schultz, Christian. Vol. I, p. 122.

They are very plentiful in this quarter, and considered the largest known throughout the western country, many of them weighing from thirty to forty pounds, and sometimes so overburthened with fat that they fly with difficulty." In 1818, Rev. John Heckewelder's "History, Manners and Customs of the Indian Nations" speaks of the turkey coats.¹ "The feathers, generally those of turkey and goose, are so curiously arranged and interwoven together with thread and twine, which they prepare from the rind or bark of the wild hemp or nettle, that ingenuity and skill cannot be denied them.

Four years later, Wm. H. Blane (l. c. p. 88) when near Smithfield on the Youghiogheny River, writes "I observed that two hunters, who had just come in with some turkies they had killed, were each of them carrying one of the long heavy rifles peculiar to the Americans." In 1832, Mrs. Trollope when at Brownsville, was² "regaled luxuriously on wild turkey . . ." The same year, Vigne presents his "Six Months in America." When at Moshanan Creek he finds (Vol. I, pp. 88, 89) "The winged game of these forests are the wild turkey, which being pursued with avidity by the sportsman, is becoming more scarce every day: it is larger than the tame turkey and its plumage closely resembles that of the dark-coloured domesticated bird, but is rather more brilliant." The third note to be presented in 1832 is the rather general account of Hinton.³ "The native country of the wild turkey extends from the north-western territory of the United States to the Isthmus of Panama. In Canada, and the now densely-peopled parts of the United States, they were formerly very abundant; but like the Indian and the buffalo they have been compelled to yield to the destructive ingenuity of the white settlers, often wantonly exercised, and to seek refuge in the remotest parts of the interior. On hearing the slightest noise, they conceal themselves in the grass, or among shrubs, and thus frequently escape the hunter, or the sharp-eyed birds of prey: and the sportsman is unable to find them during the

¹ *Memoirs Hist. Soc. Penn.* Vol. XII, 1881, p. 203.

² Trollope, Mrs. *Domestic Manners of the Americans.* 4 edit. London and N. Y., p. 162.

³ Hinton, J. H. *The History and Topography of the United States.* London, 1832, 2 vols. Vol. II, p. 177.

day, unless he has a dog trained for the purpose. When only wounded, they quickly disappear, and, accelerating their motion by a sort of half flight, run with so much speed that the swiftest hunter cannot overtake them. The traveller driving the declivity of one of the Alleghanies, may sometimes see several of them before him, evincing no desire to get out of the road; but on alighting in the hopes of shooting them, he soon finds that all pursuit is vain." Finally, in 1843, Maximilian, Prince of Wied, when at Bordentown, Penn., says ¹ "Fans, are, in fact, an article of luxury, and are purchased in the towns; they are made of the tail feathers of the wild turkey, the crane or the swan, . . ."

Virginia and Maryland.

These furnish numerous records in the seventeenth century. Only one note precedes this period and this occurs in Thomas Heriot's "A Briefe and True Relation of the New Found Land of Virginia, London, 1588." He gives ² "Of Foule. *Turkie cockes* and *Turkie hennes*." The first note of the 17th century is that of Master George Percy in his "Observations gathered out of A Discourse of the Plantation of the Southern Colonie in Virginia by the English 1606" wherein he asserts ³ "We found store of *Turkie* nests and many egges." "A Gentleman of the Colony" (Gabriel Archer) in "A relaytion of the Discovery" ⁴ "founde (1607 May 22) an Ilet, on which were many *Turkeys*" and later he again writes "we come to the Ilet mentyoned which I call *Turley Ile*." In 1612, Captain John Smith in "A Map of Virginia With a Description of the Countrey" remarks ⁵ "wilde *Turkies* as bigge as our tame," and finds that the Indian arrows are "headed with . . . the spurres of a *Turkey* . . ."

The interesting Wm. Strachey in 1610?-1612? gives us three notes. First of all he says, ⁶ "We have seene some (Indian women)

¹ Early Western Travels. XXII, p. 68 (orig. Part I, p. 19.)

² Heriot, Thomas. etc. Reprint London, 1900, p. 41.

³ Arber, Edward. Capt. John Smith, etc. Works 1608-1631, Eng. Scholars Library. No. 16, p. lxvi.

⁴ Ibid., pp. xli, xlii.

⁵ Ibid., pp. 60, 68, 70.

⁶ Strachey, William. Historie of Travaille into Virginia. Hakluyt Soc. London. 1849, pp. 65, 72, 125.

use mantells made both of Turkey feathers and other fowle, so prettily wrought and woven with threads, that nothing could be discerned but the feathers, which were exceeding warme and handsome." In another place, he writes "Nor (do they) bring up tame poultry, albeit they have great stoore of turkies, nor keepe birdes, squirrels, nor tame partridges, In March and April they live much upon their weeres, and feed on fish, turkies" Finally comes a more general statement. "Turkeys there be great store, wild in the woods, like phesants in England, forty in a company, as big as our tame here, and it is an excellent fowle, and so passing good meat, as I maye well saie, it is the best of any kind of flesh which I have ever yet eaten there." In "A True Declaration of the Estate of the Colonie in Virginia, . . . London, 1610" we have the following:¹ "The Turkeye of that Countrie are great, and fat, and exceeding in plentie." In 1613, Alex. Whitaker says² "The woods be everywhere full of wilde Turkies, which abound, and will runne as swift as a Greyhound." In 1614, Ralph Hamor, in the same country, finds³ "There are fowle of divers sorts, . . . wild Turkeyes much bigger then our English Cranes." Four years later, 1618, in "Newes of Sr. Walter Rauleigh . . ." there appears⁴ "you shall not sleepe on the groun nor eat any new flesh till it be salted, two or three hours, which otherwise, will breed a most dangerous fluxe, so will the eating of . . . Turkies." A "Briefe Intelligence from Virginia by Letters, etc., 1624," "Virginias Verger 1625," and "Some later Advertisements touching His Majesties Care for Virginia 1624" — all three remark⁵ the abundance of turkeys in Virginia.

In 1631, Henry Fleet, Early Indian Trader notes that⁶ "the woods (above Washington) do swarm with "turkeys. Three years later, Father Andrew White in "A Briefe Relation of the Voyage into Maryland" observes⁷ "Their weapons are a bow and

¹ Force, P. Vol. III, p. 13.

² Hakluyt Posthumus or Purchas His Pilgrimes. By Samuel Purchas. Hakluyt Soc. Extra Series Glasgow 1905-1907. Vol. 19, p. 115.

³ Ibid., Vol. 19, p. 97.

⁴ Force, P. Vol. III, p. 17.

⁵ Hakluyt Posthumus. Vol. 19, p. 209, Vol. 20, p. 134.

⁶ Neill, Rev. E. D., Founders of Maryland. Albany, 1876, p. 27.

⁷ Narratives of Early Maryland. 1633-1684. N. Y., 1910, pp. 34, 43, 44.

a bundle of arrowes, an ell long, feathered with turkies feathers." These Indians "daily catch . . . turkies, . . ." and "the poore soules are daily with us and bring us turkie, . . ." In "An Account of the Colony of the Lord Baron of Baltimore, 1633" the author writes that ¹ "There are also great quantities of wild turkeys, which are twice as large as our tame and domestic ones . . ." About the same time, "A Relation of Maryland" records that ² "they (at Yoacomaco) went dayly to hunt with them for Deere and Turkies, whereff some gave them for Presents, and the meaner sort would sell to them for knives, beades and the like." "Of Birds" it relates that "there is . . . also wild Turkeys in great abundance whereof many weigh 50 pounds and upwards." In this period, another relator holds that ³ "every day they are abroad after . . . turkies and the like game: whereof there is a wonderful plenty." In another instance, he recounts how the modest Indian women brought turkies to the homes of the settlers.

About 15 years afterwards, in "A Perfect Description of Virginia . . ." there appears a note concerning ⁴ "Wild Turkies, some weighing sixtie pound weight." In 1650, Edward Williams publishes the second edition of his "Virginia" wherein he mentions ⁵ "infinetes of wilde Turkeyes, which have been known to weigh fifty-pound weight, ordinarily forty," and in comparing Virginia with China, he exclaims, "Let her shew us Turkies of 50 pound weight." Six years later, 1656, "Leah and Rachel" appears. Hammond, its author, claims ⁶ "wild Turkeys are frequent, and so large that I have seen some weigh neer threescore pounds." Ten years later, George Alsop, in describing the "Character of the Province of Maryland" notes ⁷ "especially the Turkey, whom I have seen in whole hundreds in flights in the Woods of Mary-Land, being an extraordinary fat Fowl, whose flesh is very pleasant and sweet." Shortly after, 1669, Nathaniel Shrigley enumerates ⁸ "Turkies"

¹ *Ibid.*, p. 10.

² *Ibid.*, pp. 75, 80, 98.

³ Shea's *Early Southern Tracts*. No. I, pp. 16, 18.

⁴ Force, P. Vol. II, pp. 17, 3.

⁵ Force, P. Vol. III, pp. 12, 21.

⁶ Force, P. Vol. III, p. 13.

⁷ *Narratives of Early Maryland*. pp. 347, 357.

⁸ Force, P. Vol. III, p. 4.

among the "Fowle naturally to the Land." In 1688, Mr. John Clayton the Botanist, communicates to the Royal Society the following:¹ "Ther be wild Turkies extream large; they talk of Turkies that have been kill'd, that have weighed betwixt 50 and 60 Pound weight; the largest that I ever saw, weigh'd someting better than 38 Pound; they have very long Legs, and will run prodigiously fast. I remember not that ever I saw any of them on the Wing, except it were once. Their Feathers are of a blackish shining Colour, that in the Sun shine like a Dove's neck, very specious." The year previous, 1687, Richard Blome (l. c. p. 189) holds, "They have great plenty of Fowl: as *wild Turkeys*, which usually weigh six Stone, or forty eight pound;" Finally, in "The Social Life of Virginia in the Seventeenth Century," P. A. Bruce (l. c. pp. 212, 167) writes as follows: "As the area of cultivated ground grew wider, the number of partridges steadily increased in consequence of their being able to find a larger supply of food. On the other hand, the number of wild turkeys perhaps as steadily diminished within the same area, as the turkey is distinctly a forest bird, that is very shy of human habitations." "The wild turkeys frequenting the woods were of remarkable weight and afforded a popular repast."

In the eighteenth century, the records number fourteen or fifteen. In 1705, Robert Beverley in his "History and Present State of Virginia. London" (book III, p. 60) writes that "They (Indian) fledged their Arrows with Turkey Feathers, which they fastened with Glue etc.,— they also headed them with the Spurs of the Wild Turkey-Cock." In 1708, Eben Cook, in burlesque verse, remarks its presence in Maryland and adds a footnote that² "Wild turkies are very good Meat, and prodigiously large in *Maryland*." In the "History of the Dividing Line Betwixt Virginia and North Carolina" William Byrd (1728) mentions a dozen or more instances where wild turkeys help to supply the larder. On Sept. 23, he says³ "Our hunters brought us four wild turkeys, which at

¹ Force, P. Vol. III, p. 30.

² Sheas Early Southern Tracts. No. II. The Sotweed Factor. London, 1708, pp. 19, 20.

³ The Westover Manuscripts. Petersburg, Va., 1841, pp. 39, 45, 47, 48, 49, 51, 52, 54, 64, 69, 76, 78, 80.

that season began to be fat and very delicious especially the hens. These birds seem to be of the bustard kind, and fly heavily. Some of them are exceedingly large, and weigh upwards of forty pounds; nay, some bold historians venture to say, upwards of fifty pounds. They run very fast, stretching forth their wings all the time, like the ostrich, by way of sails to quicken their speed. They roost commonly upon very high trees, standing near some river or creek, and are so stupified at the sight of fire, that if you make a blaze in the night near the place where they roost, you may fire upon them several times successively, before they will dare to fly away. Their spurs are so sharp and strong, that the Indians used formerly to point their arrows with them, though now they point them with a sharp white stone. — In the spring the turkey-cocks begin to gobble, which is the language wherein they make love.” In another place, he mentions the attitude of Indians towards mixing meats in the same dish. “Our men killed a very fat buck and several turkeys. These two kinds of meat they boiled together, with the addition of a little rice or French barley, made excellent soup, and what happens rarely in other good things, it never cloyed, no more than an engaging wife would do, by being a constant dish. Our Indian was very superstitious in this matter, and told us, with a face full of concern, that if we continued to boil venison and turkey together, we should for the future kill nothing, because the spirit that presided over the woods would drive all the game out of our sight.” “The Indian likewise shot a wild turkey, but confessed he would not bring it us lest we should continue to provoke the guardian of the forest, by cooking the beasts of the field and the birds of the air together in one vessel. . . .” Of this same practice, “A Journey to the Land of Eden 1733” gives us the following:¹ “It was strange we met with no wild turkeys (Morris’ Creek near Banister River), this being the season in which great numbers of them used to be seen towards the mountains. They commonly perched on the high trees near the rivers and creeks. But this voyage, to our great misfortune, there were none to be found. So that we could not commit that abomination, in the sight of Indians, of mixing the flesh of deer and turkeys in our broth.”

¹ The Westover Manuscripts. p. 108.

In a Letter written March 21, 1739, John Clayton of Gloucester Co., Va. writes ¹ of "Virginia Game and Field Sports." "Then for fowls (there are) wild Turkey's very numerous" and in another place he contends that "the diversion of shooting Turkies is only to be had in the upper parts of the Countrey where the woods are of a very large extent, and but few settlements as yet tho' they increase daily." Two years later, Oldmixon (l. c. p. 445) remarks, "There's great variety of wild Fowl, as Swans. . . Curlews. . . ; and which is best of all of them, wild Turkies, much larger than our tame; they are in season all the Year. The *Virginians* have several ingenious Devices to take them; among others, a Trap, wherein 16 or 17 have been caught at a time."

In 1765, Rogers states that the colonists in Maryland,² "in their infant state. . . were greatly assisted by them (Indians) receiving . . . plentiful supplies of. . . turkies." Of the period from 1763 to 1783, Jos. Doddridge remarks that,³ "The wild Turkeys which used to be so abundant as to supply no inconsiderable portion of provision for the first settlers, are now rarely seen." In his "Travels in North America" Chastellux notes ⁴ the wild turkey only in Virginia. In "Notes of the State of Virginia" written in 1781, Thos. Jefferson merely lists (p. 99) "*Meleagris Gallopavo. Gallapavo sylvestris. Wild Turkey*" for the state. About this same period, J. F. D. Smyth records ⁵ "a great abundance of game, such as. . . wild turkeys," in Pitsylvania Co., Va. At Wart Mt., when he and a young backwoodsman returned, they "brought a fine wild turkey which he had shot: and he carried it along with us in order to dress for supper where we should halt at night." On Little River, "Here we killed another wild turkey and dressed it for supper as before; indeed they were so numerous that we could have easily subsisted a company of men upon them, and might kill almost any number we pleased." Finally, in "A Topographical Descrip-

¹ The Virginia Magazine. Vol. VII, Oct. 1899. No. 2, pp. 173, 174.

² Rogers, Major Robert. A Concise Account of North America. London, 1765, p. 88.

³ Doddridge, Rev. Dr. Jos. Notes on the Settlement and Indian Wars of the Western Parts of Virginia and Pennsylvania, from the year 1763 until the year 1783 inclusive, etc. Wellsburg, Va., 1824, p. 69.

⁴ Chastellux, Marquis de. Travels . . . Translation N. Y., 1828, p. 251.

⁵ Smyth, J. F. D. A Tour in the United States of America. London, 1784, 2 vols. Vol. I, pp. 289, 309, 311.

tion of the County of Prince George in Virginia 1793" John Jones Spooner presents the last note of the century.¹ "The woods afford wild turkies."

In the next century, John Woods remarks of Pews Town, Va. that² "We were told. . . turkeys. . . were plentiful in many places, but we had not seen any." Three years later, Blane, (l. c. pp. 84, 86, 87, 88, 106) in a journey across the Alleghanies along the road from Hagerstown to Cumberland, remarks (1822-23) that "These mountains abound with such game as deer, wild turkies. . . ." From Cumberland to Wheeling "Wild Turkies. . . are uncommonly plentiful in these mountains, owing to the rocky nature of the ground, which will in all probabilities prevent its being cultivated for centuries," and in this region he holds that the presence of rattlesnakes deters hunters from hunting turkies. Finally, at Blue Lick he finds, "The neighbourhood, however, abounds in deer and wild turkeys, which afford excellent sport for a hunter." In 1824, Candler, in "A Summary View of America," (p. 79) remarks that "Turkies are very common." He may be speaking of the domestic form. In discussing the "Physical Geography of Maryland" J. T. Ducatel says³ "The eastern flank of South mountain (valley of Middletown). . . is the retreat of large gangs of wild turkey (*Meleagris gallapavo*). . . ." In 1842, J. S. Buckingham, in speaking of Virginia, says⁴ "These potatoes and the turkeys, of which Virginia furnished also the first supply to Britain, have neither of them degenerated in this state, from their ancient and original stock." In 1879, J. T. Scharf publishes his "History of Maryland" in which he asserts that⁵ "In the 'backwoods,' the wild turkeys and deer abounded in great numbers; deer and wild turkeys were still shot on the Patapsco at Ellicotts Mills as late as 1773 and no man's larder needed to be empty at any time."

¹ Mass. Hist. Soc. Colls. Vol. III, 1794, p. 86.

² Early Western Travels. X, p. 205 (orig. p. 48).

³ Transactions Md. Acad. Sci. and Lit. Vol. I, Baltimore, 1837, p. 40.

⁴ Buckingham, J. S. *The Slave States of America*, London, 1842. 2 vols. Vol. II, p. 286.

⁵ Scharf, J. T. Vol. II, pp. 8, 4.

THE PRESENT STATUS OF THE TRUMPETER SWAN
(*OLOR BUCCINATOR*).

BY HENRY K. COALE.

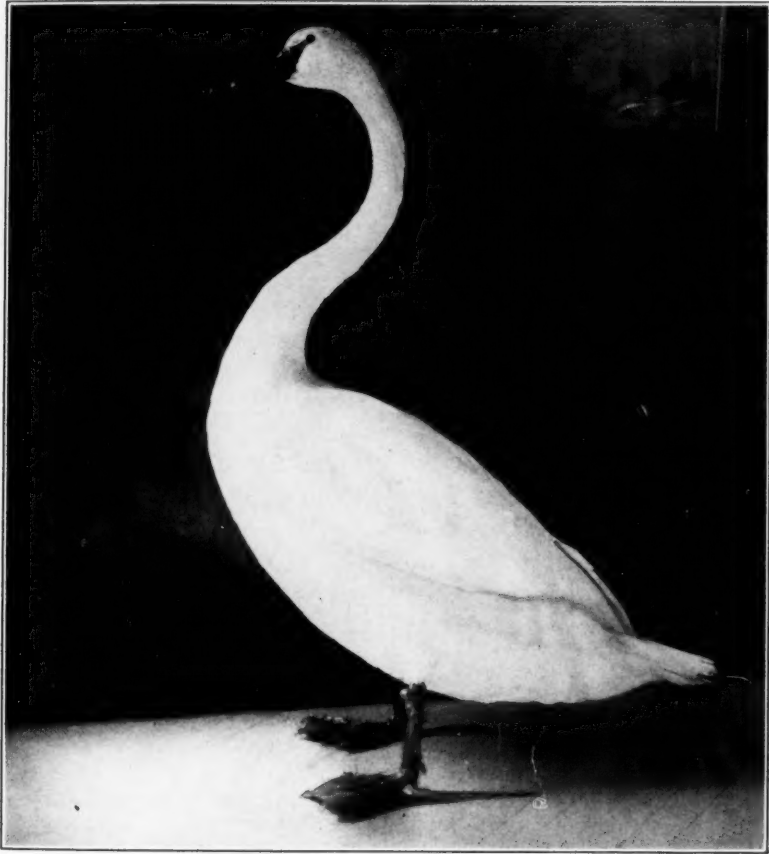
Plates VII-X.

At the meeting of the American Ornithologists' Union held in New York City, in the fall of 1913, a number of members were discussing the rarity of the Trumpeter Swan; the general opinion being that this magnificent bird was nearing extinction; and would soon disappear forever.

During the ensuing winter, upon looking up the literature on the subject, I was surprised to find how little was known about this bird; many writers simply repeating Dr. Richardson's remarks in his original description. I determined to gather together the published records of the bird and ascertain as nearly as possible how many specimens are extant.

In the present paper I have brought together many facts from various sources, including information gleaned through correspondence with curators of museums, and private collectors. Of the eighty-five replies received in response to my inquiries, sixty-three from museums having 1,000 or more birds, reported "No specimens of the Trumpeter Swan in our collection." Of the remaining twenty-two replies, eight were from museums and five from collectors, who have specimens; while nine contained interesting information about the species.

It was not until 1831 that the discovery was made by Dr. John Richardson of the existence of a new species of swan in North America (*Fauna Boreali Americana*, by William Swainson and John Richardson, London, 1831). Up to that time the thousands of swan skins that were shipped, through the Hudson Bay Company, were thought to be all of one kind — *Olor columbianus*. In Dr. Richardson's original description of *Cygnus buccinator* we find: "Special characters; white; head glossed above with chestnut; bill entirely black; without a tubercle; tail feathers 24; feet black. This is the most common swan in the interior of the fur countries.



MALE TRUMPETER SWAN (*Olor buccinator*).
Collection of the Chicago Academy of Sciences.



It breeds as far south as latitude 61°; but principally within the Arctic Circle. . . . The type of the species is a mounted bird in the Hudson Bay Museum. It measures length 70 inches; tail 9.6 inches, wing 26 in., bill above 4.11 in., nostril to tip 2.7 in., tip of bill to eye 6 in., mid. toe 6.9 in.

Lawson observes (History of North Carolina, 1831.) "There are two sorts of swans in Carolina, the larger of which is called from its note the Trumpeter," and Hearne adds, "I have heard them in serene evenings, after sunset, make a noise not very unlike a French horn, but entirely divested of every note that constitutes melody, and have often been sorry that it did not forbode its death."

At the annual meeting of the Boston Society of Natural History, May 17, 1843, Dr. Wyman "Exhibited the sternum of a male Trumpeter Swan. The keel of the breast bone contains a remarkable cavity extending its whole length designed to receive the trachea. . . . It only exists in the male."

Preble (North American Fauna No. 27) says: "McFarlane states that between 1853 and 1877 the Hudson Bay Company sold a total of 17,671 swan skins. The number sold annually ranged from 1312 in 1854 to 122 in 1881", and Nuttall is quoted as saying that the Trumpeter Swan furnished the bulk of them."

Dr. Suckley remarks (Pacific R. R. Rep., Vol. XII, 1853-5): "I obtained a fine Trumpeter Swan on Pike's Lake, Minnesota, in June 1853. They were quite common on the lakes in that vicinity in the Summer, breeding and raising their young."

Baird (Pacific R. R. Rep., Vol. IX, 1858) says that it ranges over "Western America from the Mississippi Valley to the Pacific"; and remarks "this large and powerful swan doubtless has special anatomical peculiarities of trachea to distinguish it from *C. americanus*, as the note is much more sonorous."

McFarlane (Proc. U. S. Nat. Mus., XIV, 1861, 66) says: "Several nests were met with on the barren grounds on Islands in Franklin Bay; one containing six eggs was situated on the beach on a sloping knoll. It generally lays 4 to 6 eggs."

At a meeting of Linnean Society of London, March 20, 1832 (Proc. Linnaean Society, p. 2) William Yarrell called attention to the peculiar anatomy of this swan — "I am indebted to Dr. Richardson for an example of the sternum and trachea of a new

species of wild swan, *Cygnus buccinator*. . . . The trachea is made up of narrow bony rings and small intervening membranous spaces as far as the first convolution within the breast bone, but the returning portion of the tube, forming a second convolution is composed of broader and stronger bony rings with broader intervals."

The course of the trachea may easily be traced by consulting Plate IX.

After traversing the neck it enters the lower part of the cavity on the anterior face of the sternum at "A," thence follows backwards through the horizontal covered protuberance in the upper surface of the sternum, a distance of eight inches to near the posterior line "B.," taking the curve of the cavity it comes forward six inches and rises into the vertical bony protuberance, "C.," following its curve, thence downward, and emerges through the upper part of the opening in the sternum, dips below the bridge of the "wish bone" and curving backward between the shoulder blades, "D" (obscured in the picture) enters the breast, where at its junction with the bronchiæ "E." it is flattened vertically to an eighth of an inch in width. The total length of the structure shown is 13.5 in., length of trachea 59 in., length of keel of sternum 11 in., opening $\frac{7}{8}$ in. wide, $2\frac{1}{2}$ in. high.

In *Olor columbianus* the cavity is in the anterior portion of the sternum only, the trachea making but one convolution, which is in the vertical (not horizontal, as some authors state) protuberance "A."

Plate X shows the anterior aspect of the sternum with the trachea entering the cavity below, and emerging above. I am indebted to Dr. C. W. Richmond for the loan of this sternum from the U. S. National Museum Collection.

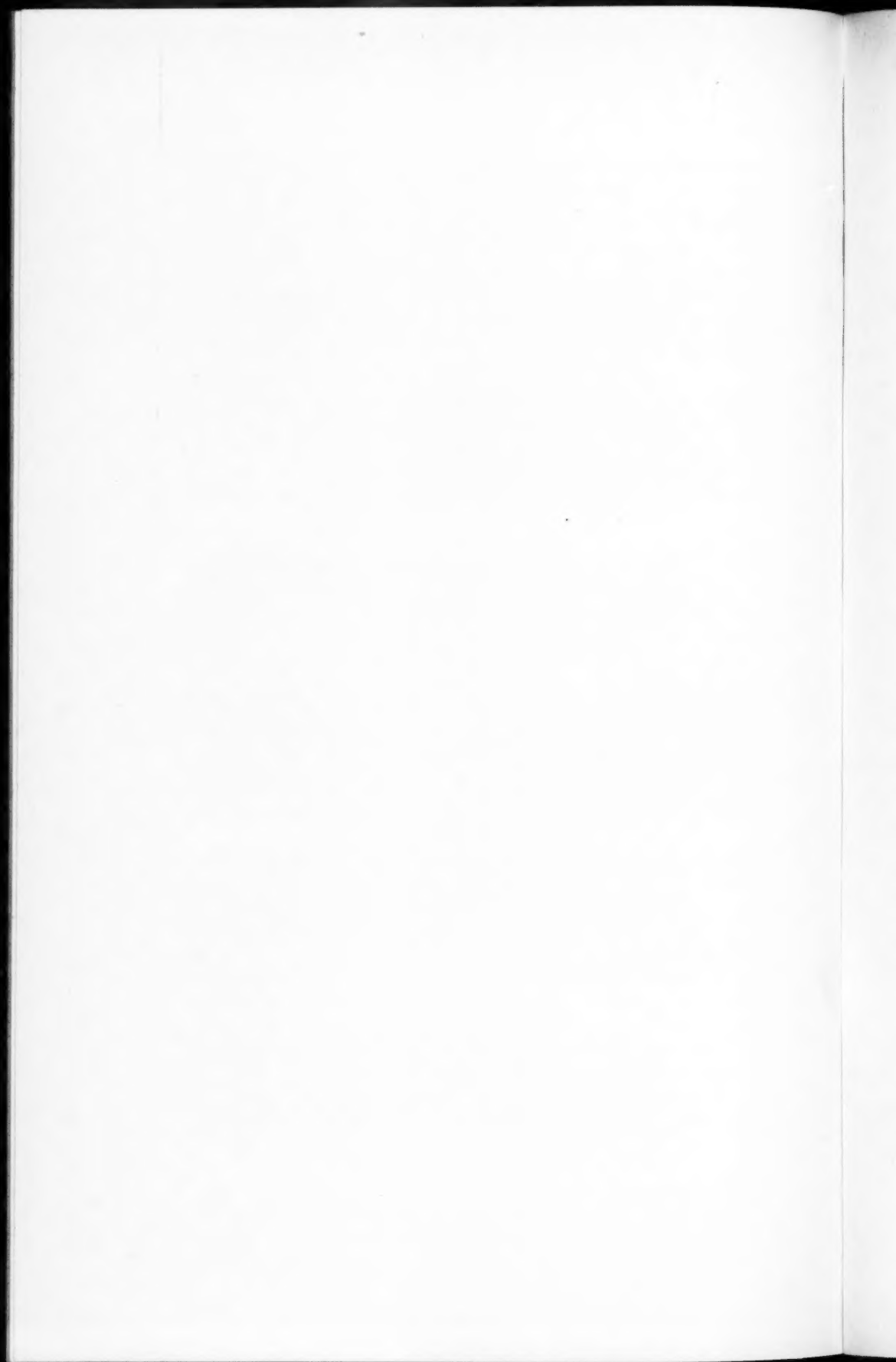
Stejneger, (Vol. V, Proc. U. S. Nat. Mus. 1882) outlines a monograph of the Cygninae, and on p. 216 gives a table of measurements of ten specimens, with remarks; "The position of the nostrils being set more backwards in the Trumpeter than in the Whistling Swan, is thus the only mark which is possible to express in a short diagnosis, and which I have found constant and easily perceptible."

Baird, Brewer and Ridgway (Vol. 1, Water Birds of N. America, 1884), give an interesting description of the habits of the Trumpeter;



TRUMPETER SWAN (*Olor buccinator*).

1. Head of mounted specimen in Chicago Academy (see Plate VII).
- 2 and 3. Adult male, North Dakota. Collection of H. K. Coale, No. 17779, showing outline of bill.



among other notes, "Mr. W. E. Rice found a nest at Oakland Valley, Iowa, in the Spring of 1871 and took three of the young which were successfully raised. The eggs are of a uniform chalky white color, and are rough granulated on the surface. They measure 4.35 to 4.65 in length, and 2.65 to 2.90 in width."

A number of notes have appeared in the 'Nuttall Bulletin' and 'The Auk'.

J. J. Dalgleish (Bull. Nuttall Orn. Club, 1880, Vol. V) mentions the occurrence of *Cygnus buccinator* in Great Britain: "Five seen, four shot, Adelburg, Suffolk, Oct. 27, 1866, one of these specimens has been examined by J. H. Gurney."

H. Nehrling (Bull. N. O. C., Vol. VII, 1882) says, "Every winter there are large numbers on Galveston Bay and the Gulf of Mexico, near the coast."

W. W. Cooke (Auk, Vol. I, 1884) gives the "Chippewa Indian name 'Wabisi' (White bird)."

A. W. Anthony (Auk, Vol. III, 1886) says that it is "Found in large numbers on the Columbia River."

B. W. Evermann (Auk, Vol. III, 1886) says for Ventura, Cal., "Winter Visitant with the preceding species (*O. americanus*) but more common."

Albert Lano (Auk, Vol. XIII, 1896) speaking of western Minnesota says: "Some of the oldest sportsmen tell me that they have observed this swan quite regularly on Lac qui parle during the Spring and Fall migrations. A beautiful adult male now in my collection, shot near here (Madison, Minn.) April 9, 1893, weighed 15 lbs. but it was not fat. It measured: length 51 in., extent 77 in., wing 28 in., tail 7 in."

E. A. McIlhenny (Auk, Vol. XIV, 1897) says for Louisiana, "known as 'Cygne,' a winter resident on the coast; more common than the preceding (*O. columbianus*)."

J. H. Fleming, for Toronto, Ontario (Auk, Vol. XXIII, 1906), "There are no recent records, but Prof. Hincks described in 1864 a new swan, "*Cygnus passmori*" taken here, which was really a young Trumpeter and between 1863 and 1866 he was able to get six local birds to examine. There are two specimens in the collection of Trinity University that were no doubt taken here." (Proc. Linn. Soc. 1864.)

Beyer, Allison and Kopman in their *Birds of Louisiana* (Auk, Vol. XXIV, 1907), "In the past this species has proved commoner than the preceding (*C. americanus*) especially about the mouth of the Mississippi."

J. Claire Wood (Auk, Vol. XXV, 1908) reports for Michigan, "One specimen in the City market in Nov. 1893, was taken near Wind Mill Point, Lake St. Clair, according to the statement of Thomas Swan."

In E. H. Eaton's 'Birds of New York' (1909), he illustrates the bills of both swans, side and top view, showing the difference in shape, and position of the nostrils. He remarks, "I have been unable to find any New York specimen of this swan."

McCoun's 'Catalogue of Canadian Birds' (1909) records: "A pair found breeding at Buffalo Lake, Alberta, Apr. 7, 1891, nest contained 5 eggs."

Audubon in his 'Birds of America,' devotes seven pages to the Trumpeter Swan, giving a very complete and interesting history of its movements and habits, from personal observation of the birds on the Ohio and Mississippi Rivers and at New Orleans. He also illustrates the adult, and the young about two thirds grown, drawn from nature, showing it in slaty bluish plumage, head light brown, and legs yellowish brown.

E. W. Nelson (Report of Nat. Hist. Survey made in Alaska 1887) says: "a specimen of this little known swan is noted by Dall as having been secured with its nest and eggs at Fort Yukon by Mr. Lockhart, thus rendering it an Alaskan species."

Elliott Coues (Birds of the North West) says: "Chiefly from the Mississippi Valley and northward to the Pacific, Hudson's Bay, Canada, etc."

R. M. Anderson in 'Birds of Iowa' (Proc. Davenport Academy of Sciences, 1907) says: "The only definite breeding record which I have been able to trace is from the veteran collector, J. W. Preston, in a letter dated March 22, 1904 . . . 'a pair of Trumpeter swans reared a brood of young in a slough near Little Twin Lakes, Hancock Co., in the season of 1883. This was positively *Olor buccinator*.'"

W. C. Knight in his 'Birds of Wyoming' gives two or three records, the last being a bird taken by Mr. Van Dyke, at Lake De Smet in the Spring of 1897.

One of the most interesting replies to my inquiries is from Mr. E. S. Cameron of Marsh, Montana (April 30, 1914). He writes: "Twenty years ago Trumpeter Swans were common in Montana, and used regularly to winter here, but are now on the verge of extinction. It is generally stated by the Kootenai Indians that they bred in the Flathead Valley up to the first immigration of whites in 1886; but the latest positive record of Trumpeters nesting is in 1881. These swans nested at Lake Rodgers, 20 miles west of Kalispell, at Swan Lake, and on the east side of Flathead Lake, and on the lakes which drain Clearwater, a branch of the Big Blackfoot River. An adult male Trumpeter was shot at the mouth of Flathead River, Nov. 16, 1910. It weighed 31 pounds. Another similar bird was killed by an Indian on St. Mary's Lake in the fall of 1912. This was the largest Trumpeter ever killed in Montana, and would have approached, if it did not equal, Audubon's record bird of 38 pounds in weight. A young female Trumpeter under two years old, weight 20 pounds full, was shot at Cut Bank, Teton Co., on Nov. 10, 1913."

Mr. C. W. Beebe records seventeen specimens as having been in the New York Zoölogical Park from 1899 to 1910, "three from Idaho, six from Salt Lake City, one from Lewiston, Maine (Nov. 25, 1901, found exhausted) and seven without data. At present one survives."

Through the courtesy of Mr. Frank C. Baker of the Chicago Academy of Sciences I am able to give measurements of the fine mounted Trumpeter in the Academy Museum (Plate VII). It is an adult male and was shot on the Columbia River, three miles west of Portland, Oregon, April 8, 1881. The bird is pure white, except the forehead and crown which are washed with rusty color. It stands 44 inches high. The wing measures 26 inches, tail of 24 feathers 9.5 in., tarsus 4.5 in., middle tel. 7 in., eye to tip of bill 5.25 in., nostril to tip of bill 2 in.

A Whistling Swan in the same collection measured for comparison, gives wing, 22 in., tail 9 in., eye to tip of bill 4.4 in., tarsus 4 in., mid. tel. 6.5 in., nostril to tip of bill 1.5 in.

The Field Museum of Natural History, has three young Trumpeters from one to two and one half years old, presented by Judge R. M. Barnes, who had them alive. They are without data.

The U. S. National Museum has seven skins and one mounted specimen. Those with data are:

No. 5476 ♂. Yellowstone, Wyo., Aug. 22, 1856, F. V. Hayden.

" 19963 Ad. Fort Resolution, Can., May 24, 1860, R. Kennicott.

" 62367 Ad. ♂. Snake River, Ida., Sept. 23, 1873, Dr. C. H. Merriam.

" 70317 Ad. ♂. St. Clair Flats, Mich., Nov. 20, 1875, W. H. Collins.

No. 81290 Ad. ♂. Lake Koshkonong, Wis., Apr. 20, 1880, Thure Kumlein.

Another Wisconsin record is an adult male hanging as "dead game" in a local billiard hall in Chicago. It was shot in Waukesha Co. in February, 1904, by Dr. F. S. Crocker.

The only Mexican record, is a specimen in the Museum of Comparative Zoölogy at Cambridge, which was shot by F. B. Armstrong at Matamoras, Tamaulipas, Mexico, January 21, 1909 (see Phillips, Auk, Vol. X. p. 72). No. 49836, ♀. "There is also in the museum an adult (mounted), from the Greene Smith collection, and a chick labeled *O. buccinator*, with no data" (Bangs—letter June, 1914).

In the Government Museum, Banff, Alta., Can., Dr. N. B. Sanson, states that there is "One specimen from Manitoba, 1887."

From the Public Museum of Milwaukee, Director Henry L. Ward, writes: "Our only specimen was received from the Wisconsin Natural History Society, with no data except "Wisconsin."

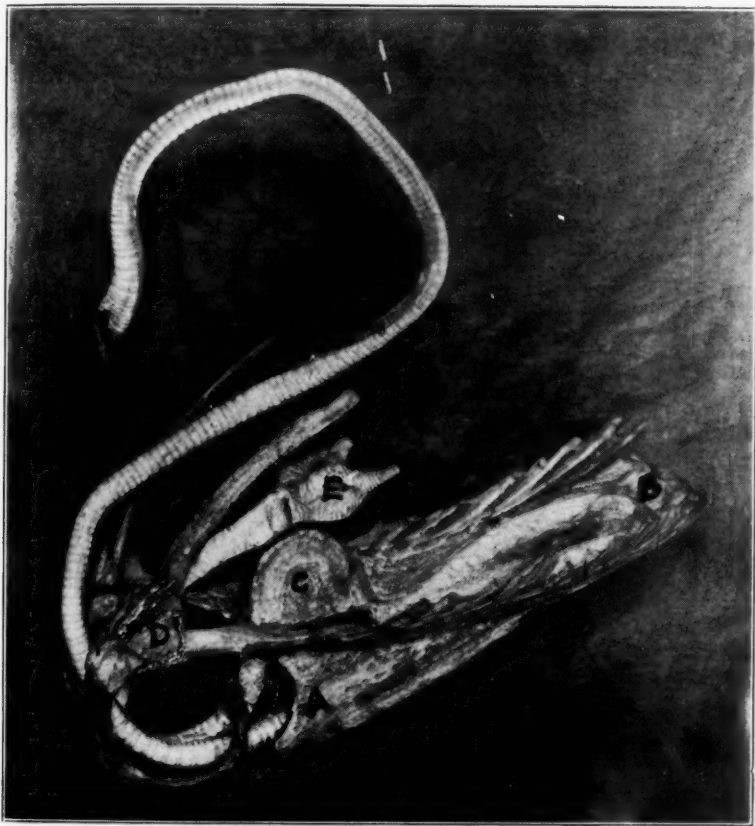
Prof. R. M. Bagg, Lawrence College, Appleton, Wis., has kindly sent me photos of two mounted specimens in the museum, which have no data.

Prof. Lynds Jones, Oberlin College, Ohio, writes: "There is a specimen in the collection received from J. C. Catlin, late of Ravenna, Ohio, about which it is stated that it was collected thereabouts in the '80s."

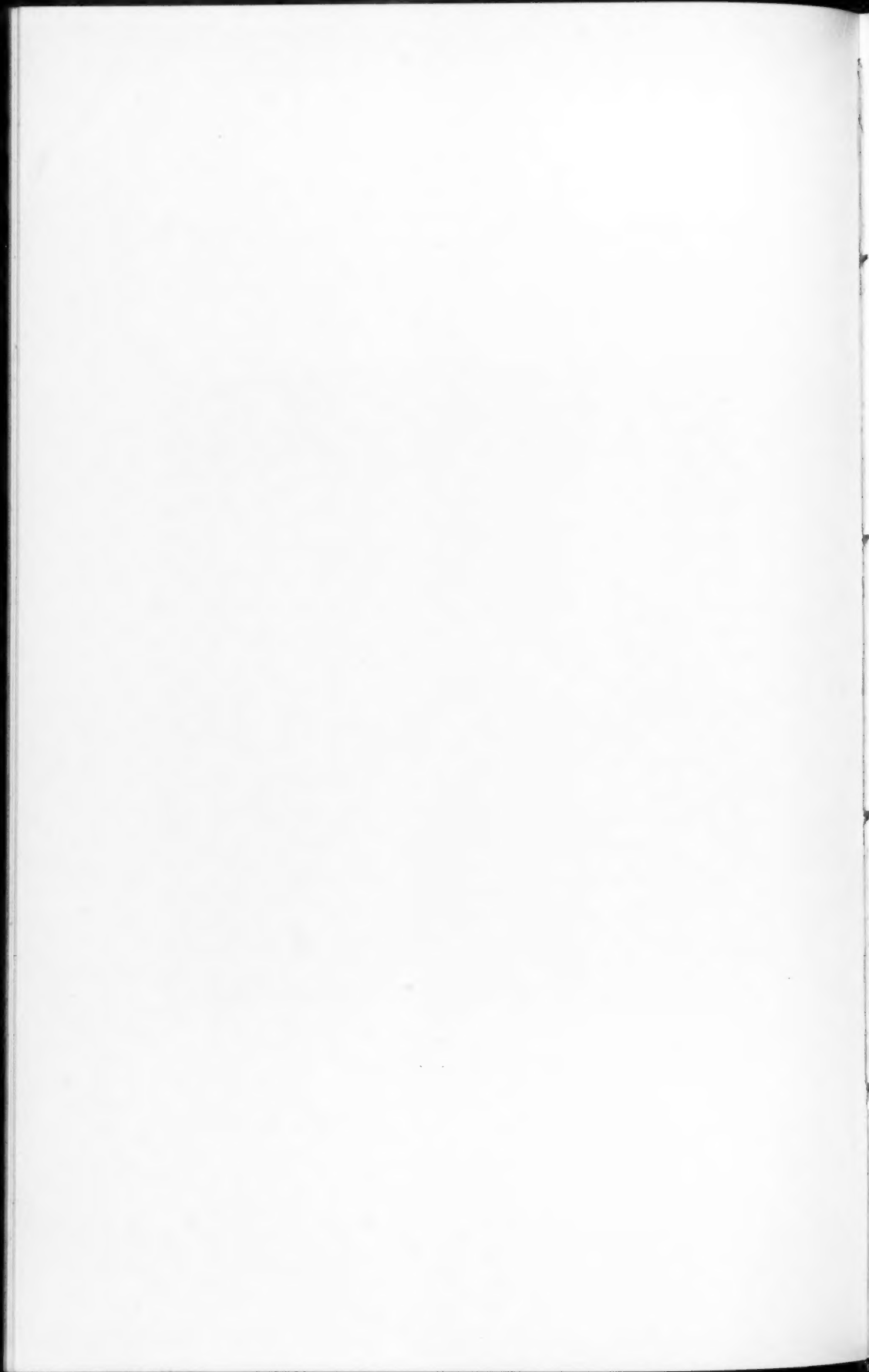
P. A. Taverner, Government Survey Museum, Ottawa, Can., writes: "We have but one specimen in the Museum, a mounted bird, killed on the St. Clair Flats in 1884.

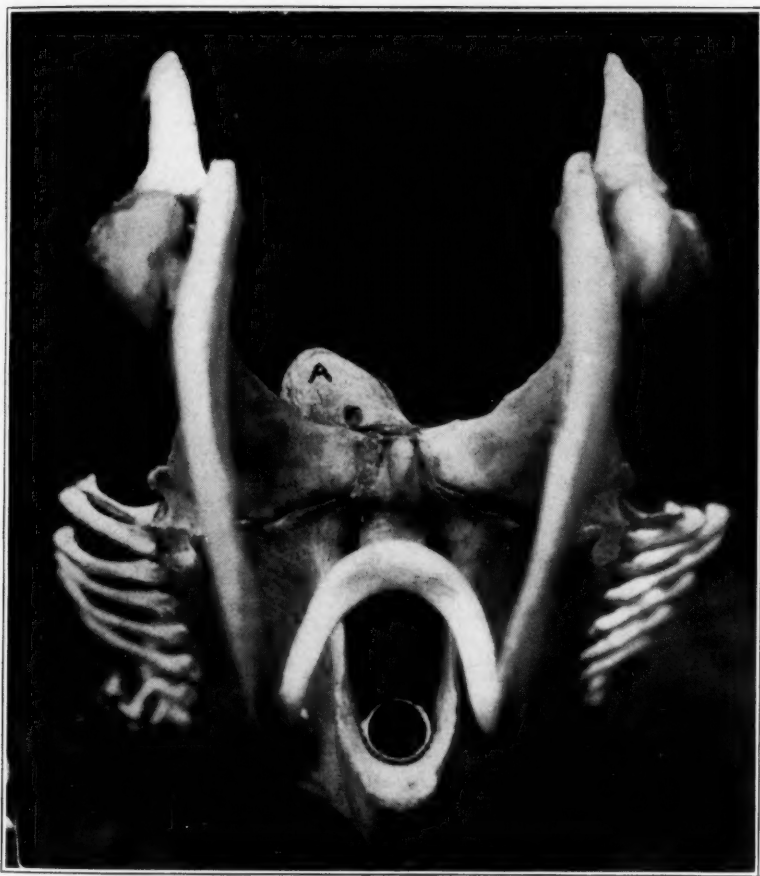
Mr. J. H. Fleming of Toronto, writes, "I have one Trumpeter Swan, shot about 1878 on Lake St. Clair, on the Toronto side."

Dr. H. H. Brimley, Curator State Museum, Raleigh, N. C.,

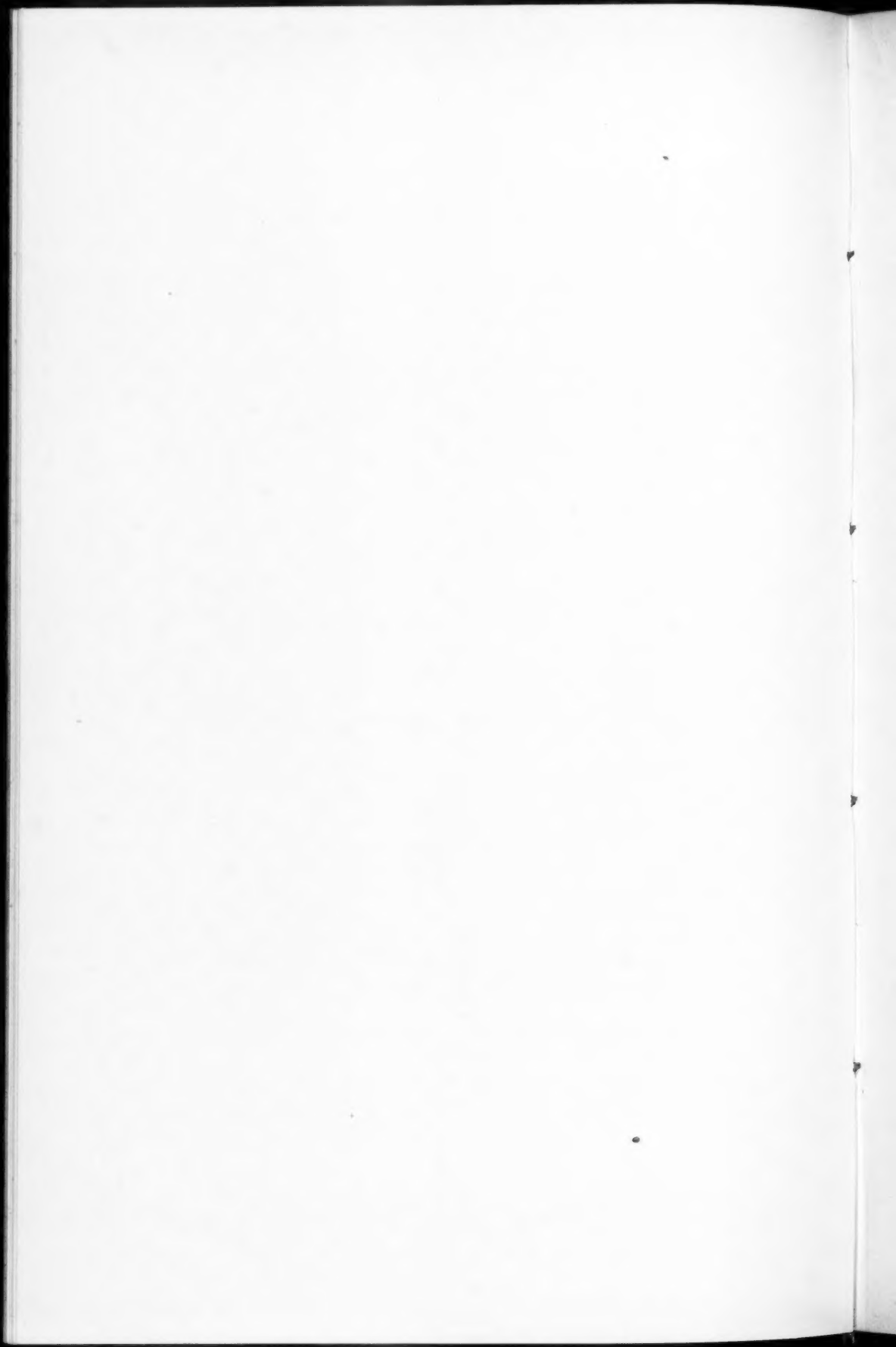


TRACHEA AND STERNUM OF MALE TRUMPETER SWAN (*Olor buccinator*).
Shown in skin on Plate VIII.





ANTERIOR VIEW OF STERNUM OF TRUMPETER SWAN (*Olor buccinator*).
U. S. National Museum Collection.....



reports: "So far as I know the Trumpeter Swan has never been taken in this state, though the Whistling Swan is quite plentiful on Carrituck Sound in winter. I saw hundreds if not thousands of them in January, 1914."

Prof. Wm. C. Mills, Curator Museum of the Archæological and Historical Society of Ohio, at Columbus, states: "We have in our collection a great many bones of the Trumpeter Swan. It seems that this bird, although a very rare migrant at the present time, was here in great numbers in pre-historic time, and we find their bones in the villages of the old Indians, who always used the leg bones for making implements, while the wing bones were seldom used. I found specimens in the Baum, Bartner and Madisonville village sites."

Dr. Joseph Grinnell, states that he has "no knowledge of its occurrence in California in recent years: in fact I know of no specimens in any California collection."

Mr. F. C. Lincoln, Colorado Museum of Natural History at Denver, says: "It can only be considered a straggler in Colorado. The one mentioned by W. L. Selater in his 'Birds of Colorado' as a representative of this form, is a Whistling Swan."

Dr. L. B. Bishop, New Haven, Conn., writes: "The only Trumpeter in my collection is an adult male, shot at upper Stillwater Lake, Mont., March 11, 1902, No. 25378 of my collection. It was bought for me by Mr. E. S. Cameron of the owner, Miss G. M. Duncan of Whitefish, Mont."

Dr. Leonard C. Sanford, New Haven, Conn., writes: "I have in my collection three Trumpeter Swans which I purchased as young birds from a dealer, who got them from Montana, but declined to give me the exact locality. They are positively identified by Chapman and Hornaday."

Mr. John E. Thayer, Lancaster, Mass., writes: "I bought a pair of live Trumpeter Swans three years ago, that were taken from the nest in Montana. The male died last autumn and I had him made into a skin. I have a magnificent mounted specimen that a friend gave me, but he did not know where it came from. I think it is one of the rarest."

It was my good fortune to procure from Mr. Charles Dury, the veteran taxidermist of Cincinnati, a beautifully prepared skin of the

Trumpeter, together with the sternum and trachea shown in plate. The bird was taken in North Dakota in Nov., 1891. Mr. Dury informs me that there is a mounted pair in the museum of the Cuvier Club, one of which, the male, was shot from a flock of three, on the Ohio River near Cincinnati in December, 1876. Mr. Dury writes "several were taken at St. Mary's Reservoir in spring and fall, when I visited the place from the early '70s to the late '80s. That body of water was the resort of water birds in vast swarms, including both species of swan. The Whistling Swan was always more abundant than the Trumpeter. They would alight in the open water and were very wary and difficult to shoot. The last time I visited the Reservoir the birds were in such diminished numbers that I never went back."

Same bird shown in Plate VIII, note the parallel lines of bill — a distinguishing feature. (The rule shown in the cuts is 12 in. in length.)

Allen D. Hole, Curator, Earlham College, Richmond, Indiana, writes: "We have in our Museum a mounted Trumpeter Swan without data. Tail of 22 feathers."

F. Smith, Curator, University of Illinois, Champaign, writes that they have "One specimen of the Trumpeter Swan obtained from W. N. Butler, Anna, Ill., in 1880. No data."

Judge R. M. Barnes, Lacon, Ill., writes me: "There are at present ten known birds of this species in confinement, five of which are on my home place. I have been unable to breed any birds here."

A number of alleged Trumpeters which I traced proved to be Whistling Swans and many records also proved erroneous.

Of the great multitudes of Trumpeter Swans which traversed the Central and Western portion of North America sixty years ago, there are sixteen specimens preserved in museums which have authentic data. These were collected between the years 1856 and 1909.

There are besides the type, five other Canadian records, Toronto 1863, Fort Resolution 1860, Lake St. Clair 1878, St. Clair Flats 1884 and Manitoba 1887; and one from Wyoming 1856, Idaho 1873, Michigan 1875, Wisconsin 1880, Ohio 1880, Oregon 1881, North Dakota 1891, Minnesota 1893, Montana 1902 and Mexico 1909.

NOTES ON A CAPTIVE VIRGINIA RAIL.

BY ALVIN R. CAHN.¹

ON the night of October 21, 1913, Madison, Wisconsin, received its first touch of winter weather in the shape of a premature snow-storm, accompanied by high northwest winds. A university student, walking down State street near the Capitol after dark, picked up on the street an exhausted bird, which he put into his coat pocket. The next morning he brought the bird — still in the coat pocket — to the Zoölogical Laboratory for identification, and it proved to be a Virginia Rail (*Rallus virginianus*). The bird was undoubtedly migrating when overcome by the fury of the storm.

Examination showed the rail to be in remarkably good condition and it was decided to try various feeding experiments on it. The bird was accordingly placed in a room in the vivarium, where it could hide beneath the ferns and have plenty of exercise, yet find no food except that which was given it.

On the 22nd and 23rd the bird refused all food, and spent the days asleep amid the ferns, perched on one leg with its head buried under its wing. It showed no signs of fear, and slept undisturbed until actually touched, evidently regaining its lost strength. On the morning of October 24, a shallow dish of water containing ten good sized Amphipods (*Dikerogammarus fasciatus*) was placed among the plants, and half an hour later the crustaceans had disappeared. From then on there was no question as to whether or not the rail would eat; the difficulty lay in obtaining an adequate supply for its insatiable appetite. From October 24 to November 1, inclusive, the bird was fed entirely on these Amphipods, together with caddice-worms (*Platyphylax designatus*) which had been removed from their cases. Thirty amphipods and fifteen caddice-worms were fed daily, and the rail was apparently in excellent condition, although its appetite was evidently not satisfied.

On the morning of November 2, the bird was placed in a glass show-case covered with wire, size 24 × 12 × 12 inches, having a

¹ Zoölogical Laboratory, University of Wisconsin.

sand floor covered with moss, in which a dish of water was sunk, and in one corner a clump of growing ferns was located to afford the bird shelter when desired. This cage was then placed on exhibition in the entrance hall of the Biology building, where hundreds of persons passed it daily. In this situation the rail grew remarkably tame, and was apparently far more contented when surrounded by noisy students than when left alone. The presence of people was evidently associated with the idea of food, for which it was constantly on the look-out. So tame did the bird become that after two days it was allowed to fly out of the cage and feed from the hand. The rail was on exhibition under these conditions from 8 to 5:30 o'clock daily from November 2 to 9, inclusive, and it was during this period that a careful record was kept of its food, as shown in Table 1.

TABLE 1.

November:	2	3	4	5	6	7	8	9	10
Caterpillar		2	1	1			1		
Stickleback		1	1					1	
Sunfish		2	2	3	5	2		2	2
Water-bug, <i>Zaitha</i>	2	4	11	3		1	3	3	2
Meal worm	20	11	12	18	50	30	25	22	12
Grasshopper	2	1	12	3	3			4	2
Amphipods	45	144	85	95	95	80	85	38	60
Crayfish				1	1				1
Snake (DeKay)				1					
Snake (Garter)					1				
Frog (<i>Acris</i>)				1		1		1	
Frog (<i>R. pipiens</i>)							1		
Hornet (<i>V. maculata</i>)		1	3	5	2	1		4	2
Bullhead					1	2	1		
Caddice-worm		22	15		6	32	10	14	12
Snails			2		4	3		5	
Water Scorpion			3		2	2			
Earthworm		6	6	11	5	6	8		4
House-fly			1	5	5		7	1	3

What proved to be perhaps the most interesting part of the food habits was the discrimination shown in the manipulation of the

various kinds of foods. In the case of the larger aquatic animals — the sunfish, stickleback, bullhead, crayfish, Zaitha, and water-scorpion — the victims were immediately removed from the water and carried to the far end of the cage, where they were swallowed entire. Once caught, they were never dropped, but were dextrously juggled in the beak until the proper position for swallowing was obtained. The bird apparently realized the danger of allowing a captured fish to drop again into the water, and proceeded to eliminate the possibility of escape by taking the victim as far as possible from the water. It experienced no difficulty whatsoever in making away with the sunfish and stickleback, and the bullheads went down easily enough — with the exception of one which succeeded in extending its pectoral spines at the moment of passing down the narrow throat, and stuck fast. Strangulation might soon have followed had not the fish been removed, as the bird was utterly unable to dislodge it, although it made desperate efforts to shake it out. The fish was removed with forceps, whereupon the bird undaunted by its narrow escape, proceeded to make another, and this time successful attack on the same fish!

The crayfish, once caught, were pecked and shaken violently until practically all the legs had been dislodged, and the victim, thus rendered entirely helpless, was swallowed easily. After disposing of the body, the bird proceeded to search out the isolated legs, and sent them after the body.

In the case of the smaller aquatic forms, the victims were swallowed on the spot. The caddice-worms and snails (*Physa gyrina*) were left untouched while in the case, the bird making no attempt to swallow them, contenting itself with merely poking at them whenever they moved. However, when the worms and snails were removed from the cases, they were eaten greedily. Amphipods were devoured as fast as they could be caught — which was faster than they could be fed the bird — and seemed to be one of the favorite foods. The rail showed remarkable skill in the capture of these little animals, and almost never missed its aim.

On the other hand, all non-aquatic forms were promptly brought to the water and soured until soft and pliable enough to be swallowed with ease. The larvæ of the Isabella Tiger-moth (*Pyrrharcia isabella*) which were large, well developed specimens, were

manipulated the longest of all the foods except the garter snake, the largest caterpillar being soused continuously for a period of twenty-one minutes. At the end of this time the caterpillar was greatly reduced in size, as the bristles had become softened and broken, and the body limp. The frogs were hammered into insensibility in the water, where there was less chance of escape for them than on land. It took but a very few — usually less than six — vigorous thrusts of the long bill to put the frog in so helpless a condition that its escape was impossible, yet much poking and shaking followed before it was finally devoured.

The surprise, however, came when the bird was given a DeKay's snake (*Storeria dekayi*) measuring seven and one half inches in length. It was hardly expected that the bird would attempt to eat it, yet not only was the attempt made, but it proved successful and apparently easy. The snake was attacked with vigorous thrusts of the bill, and in a very short time was entirely helpless, whereupon the Rail devoured it, beginning with the head. The whole performance occupied less than fifteen minutes — less time than was required for the caterpillar — and was witnessed by a large crowd of noisy students.

The next day a second snake, this time the common Garter variety (*Thamnophis sirtalis*) was introduced. This individual measured just twelve inches when fully extended. The Rail attacked it at once, but had a great deal of trouble subduing it. After half an hour of intermittent attacks the first attempt was made to swallow the snake. The first few inches went down easily, but then quite suddenly the dazed victim managed to loop its body. Further progress being thus rendered impossible, the bird proceeded to recall what it had already swallowed, and for a few minutes stabbed violently at the snake with its beak. Satisfied by the passivity of the victim that all was now well, a second attempt was made, with the same results and sequel. Many unsuccessful trials followed in the next hour and a half, during which time the bird exhibited great concern over the constant twitching of the last inch of the snake's tail, and it was not until two strenuous hours had elapsed that the reptile was finally swallowed. After gasping a few times and settling the enormous meal into as comfortable position as possible, the bird — now a most distorted individual —

settled down for a sleep. It may be said that the only time the rail seemed perfectly satisfied was during the hour following the consumption of these two snakes. After the hour, however, it was ready once more for food, though evidently not particularly hungry.

Attempts were made to feed the rail on a less carnivorous diet, but all proffered rice and cracked corn was refused, even when the bird showed marked signs of hunger. Finely chopped liver was likewise ignored, and small pieces of bread were merely played with.

GENERAL NOTES.

Concealing Posture of Grebes.—The note under this heading in the last number of 'The Auk' by Mr. Delos E. Culver recalls to my memory a similar and yet different experience with a Pied-billed Grebe (*Podilymbus podiceps*) on August 22, 1911. Near Addison, Illinois, is a slough of about five acres area and around the edge a fringe of open water, which is two to four feet deep in spring, but becomes shallower as the season progresses, until, in very warm summer, there is sometimes no water left. In the center is a large area grown up with rushes, tall sedges and marsh grasses. On the above-named day I went into this slough, crossed the open water, which now had almost disappeared, then through the large grassy center space. When near the farther edge of this, I noticed a grebe, which was frantically trying to hide itself. Had I come from the shore near which it was, it would have had no difficulty in getting into the grassy wilderness in the center, but since I came from the other direction, it could not do so without being in my vision. When all attempts at diving proved unavailing, it nevertheless suddenly disappeared from view, although I was only fifteen feet from it. Trying to get to the bottom of this remarkable phenomenon, I looked closely and saw that it had swum as closely as possible to a small tussock of grass and stretched its neck and upper part of the body over this. The color of its plumage matching well in general effect the brown and green of the grass, the bird became next to invisible. It remained in this position until I approached to within about ten feet, when it splashed away and performed the same maneuver on another tussock.—C. W. G. EFRIG, *River Forest, Ill.*

The Double-crested Cormorant in the Chicago Area.—November 20, 1914, I saw a Double-crested Cormorant (*Phalacrocorax dilophus dilo-*

phus) resting on ice at the edge of the water on one of the lagoons of Jackson Park, Chicago. It appeared during an unusually cold wave. Mr. F. M. Woodruff in his 'Birds of the Chicago Area' published in 1907 writes of this species as being a rather rare fall visitant in the area covered by that book, and no doubt since then it has become still more rare. At least, in nearly six years acquaintance with the birds of this region, this is the first cormorant that I have ever seen.—EDWIN D. HULL, *Chicago, Illinois.*

Note on the Feeding of the Mallard.—That the Mallard (*Anas platyrhynchos*) does not dive for its food seems to be the general impression. Therefore an exception which I was fortunate enough to witness would seem worthy of record. January 28, 1914, on one of the lagoons of Jackson Park, Chicago, I saw an adult male Mallard in company with a female Lesser Scaup. When the birds were first seen about 4:30 P. M. the Scaup was diving repeatedly near the middle of the lagoon in deep water, while the Mallard was following her about, rushing up to her every time she appeared at the surface, but unable to rob her of any food. Nearly twenty minutes later the Mallard dove for the first time. A few more dives followed in fairly quick succession. Meanwhile the Scaup had been diving continuously. The diving of the Mallard in comparison with that of the Scaup was clumsy in the extreme, and accompanied with much flapping of wings and splashing of water. The actual time spent by the Mallard under water was very short, in fact, when it dove after the Scaup had disappeared it was still the first to rise. The diving would seem to be unsuccessful, for the bird quit shortly although the Scaup kept up its diving, and later about 5:00 P. M. when the birds swam off to another part of the lagoon and the Scaup again commenced diving the Mallard made no effort to do so. It is highly improbable that sufficient food, if indeed any at all, was secured in these short clumsy dives. At any rate the bird brought no food to the surface, and if any was obtained it was swallowed under water.

I notice J. G. Millais¹ states that young Mallards when about three-quarters grown and before they are able to fly, encouraged by their mothers secure a considerable part of their food by diving. This author states further in his notes on the Mallard that surface-feeding ducks exceptionally dive for choice bits of food, but he does not name the species, although presumably the Mallard is included.

From the few available observations, the most plausible theory, it seems to me, in regard to the feeding of the Mallard is that the species has nearly changed in adult life from a diving to a surface-feeding duck, although diving is habitual in the young. Reversions to this juvenal behavior occur among adults under the pressure of a very strong stimulus, as an unusually choice morsel of food, or in imitation of a diving duck after that bird has

The Natural History of British Surface-Feeding Ducks, 1902, p. 3.

repeated its diving many times. It should be noted at this point that a solitary Mallard observed from January 3 to January 13, 1914, and possibly the same bird, was never seen to dive, but fed by immersing its head merely. The action of the mothers encouraging their young to dive, as noted by Millais, if they themselves dive, cannot be explained by any of the stimuli mentioned, and provided the Mallard is a surface-feeding duck, as is generally believed, the cause is entirely obscure. Many more observations throughout the bird's life-history are badly needed.—EDWIN D. HULL, *Chicago, Illinois.*

Piping Plover at Cape May, N. J.—On September 7, 1913, while studying the birds on the beach at Cape May, five Piping Plover (*Egialitis meloda*) were observed. The birds were first found directly in front of the resort on the beach and at all times staid by themselves in a close compact band. Being exceedingly tame they allowed me to approach very close, and then ran but a very short distance when they settled down to feeding again. Only at rare intervals when hard pressed did they take wing and then as before went but a very short distance. At the moment of observation I did not fully realize what a rare bird the Piping Plover had become on the New Jersey coast.

Again on September 13, 1914, Mr. J. K. Potter, who was with me on the Cape May beach, found an individual of this species in almost the identical spot that the five of the year before had been observed.

This bird was alone and after a careful search no others were found. It was also very tame and allowed us to approach very close to it. There were at the time in the immediate vicinity, in fact all about us scattered flocks of Sanderling (*Caladris leucophæa*) and Semipalmated Plover (*Egialitis semipalmata*) but the Piping Plover showed not the slightest tendency to associate with them, in fact kept as far away from them as it possibly could.—DELOS E. CULVER, *Addingham, Delaware Co., Penna.*

The Yellow-crowned Night Heron in Colorado. A Correction.

—The writer regrets that he was in error in reporting (*Auk*, Oct. 1914, p. 535) the individual of this species taken at Byers as 'being "the second record for this State for this species and the first with full data as to location of occurrence and date of collection." He unintentionally overlooked an earlier record made by E. R. Warren, with full data (*Condor*, XI No. 1, p. 33 and *Auk*, April, 1910, p. 145), and now makes this correction and presents his apologies to Mr. Warren for this inexcusable oversight.—W. H. BERGTOLD, *Denver, Colo.*

The American Bittern Nesting on Long Island, N. Y.—Previously the American Bittern (*Botaurus lentiginosus*) has been classed as a transient visitant on Long Island, since, heretofore, no definite record of its nesting there has been forthcoming. Though the breeding range of this species includes New York State, and though the area of Long Island has been

perhaps the most attentively examined by bird students and sportsmen, it has not heretofore been recorded as a nesting bird there.

Giraud wrote seventy years ago (*Birds of Long Island*, N. Y., 1844) of this species on Long Island in his pleasing manner; of its habits and comparative scarcity, but makes no mention of its nesting. George N. Lawrence in his 'Catalogue of Birds observed on New York, Long and Staten Islands, and the adjacent parts of New Jersey,' merely lists the bird, without remark of any sort. Mr. Dutcher's notes on the birds of Long Island in Chapman's 'Handbook' 1894, and subsequent editions mention no record of its breeding, but give its status as "common transient visitant."

In my 'List of Birds of Long Island' (Abstr. Proc. Linn. Soc. of N. Y., 1907) I also gave its status as a common transient visitant, recording the limits of its occurrence, observed and collected to that time, in spring, April 16 (Sheepshead Bay) to May 5 (Montauk); autumn, August 4 (Shinnecock) to December 11 (Rockaway). I may say that data since collected have extended the spring arrival nearly a week earlier, *i. e.* to April 10 (1909, Seaford).

The actual discovery of a nest, eggs and young of the American Bittern on Long Island has apparently been reserved till the present year. On Sunday, June 14, 1914, Mr. Robert W. Peavey, to whom students of Long Island birds are indebted in many instances for his indefatigable enthusiasm, discovered a nest of this bittern on the part of the Great South Bay of Long Island, known as Jones' Beach, or locally, as Seaford Beach. This is one of the least frequented parts of the ocean-side Long Island beaches. The nest contained two newly-hatched young birds and two eggs. It was placed on salt meadow hay and was built up several inches above the level of the ground. Mr. Peavey flushed the bird off the nest when he was within three feet of her. The locality was one mile east of the High Hill Life Saving Station near the back or bay side of the beach, and within a newly-established game-preserve of about 5000 acres, which is guarded by a patrolman.

It may be said that he was the less surprised in that he had been informed of the unusual occurrence of one or more "Look-ups," as they are named in this part of Long Island, by Nelson Verity, one of the veteran gunners of this locality, and had himself seen an American Bittern on June 7 on Seaford Creek, almost within the limits of the village of the same name.

It is safe I think to say that the bird as a breeding species is exceptional on the whole of Long Island, as well as in this restricted locality — Seaford region, since Mr. Peavey has spent a day each week for many summers in this place, and his own observation as well as the testimony of the baymen of the region make its occurrence here in the nesting season altogether unprecedented.— WILLIAM C. BRAISLIN, *Brooklyn, N. Y.*

Cory's Least Bittern in Illinois.— On May 23, 1914, the writer was staying on the edge of a small swamp along the Fox River, about forty miles northwest of Chicago. While standing motionless to watch the

abundant water-fowl such as King, Virginia and Sora Rails, Coots, Florida Gallinules, and Least Bittern, which were either stepping out of the dark recesses of the clumps of cat-tail and other swamp vegetation to feed along the edge of the open places, or swimming in patches of open water further out, or at least giving vent to their various queer notes, in which they were ably seconded by multitudinous Redwings and Prairie Marsh Wrens (*Telmatodytes p. iliacus*), I was startled by a bird about the size of a Least Bittern flying out of some *Scirpus lacustris* and heading toward a thicket of button-bush, willow, etc., at the edge of which it alighted and disappeared. The bird in coloration looked unlike anything I had ever seen. The shape, size and flight all fitted the Least Bittern, but it seemed to be all black or blackish with the exception of brown crescent on the wing next to the primaries. Thinking the light or my eyes were deceiving me, I put it down as a Least Bittern. Still having some doubts, I put out in a boat which was with some difficulty poled through the dense vegetation by a friend. When nearing the bushes above mentioned the dark bird got up and flew a distance back of the boat, again alighting in the rushes. My friend, anxious to have at least one shot for his hard work of pushing the boat, took my 44 caliber shot-gun, fired — and the bird stayed there. Poling on as quickly as possible, which was still slow enough, I was surprised and elated to find the bird to be an *Ixobrychus moxenus*. On dissection it proved to be a female, the largest egg would have been ready for extrusion in a few days or a week; the stomach contained two sunfish, each about three inches long. The following is a description of the skin now in my collection. Length, from tip of bill to end of tail, $11\frac{1}{2}$ inches, to tip of longest toe, $14\frac{1}{2}$ inches, tarsus $1\frac{1}{2}$ inches, bill, $1\frac{1}{8}$ inches. Color, back, tail and broad line from crown along back of neck, where the ends of the feathers on sides of neck form it, greenish-brownish-black; wing coverts dark purplish-chestnut; primaries, dark slaty, with a trace of the flour-like bloom characteristic of the herons; cheeks, throat and neck chestnut, the fluffy tuft of feathers streaming over the bend of the wings, blackish; belly dark-purplish brown, quite different from the neck, in middle of abdomen some white feathers, forming an irregular white patch; sides gradually darkening into blackish; culmen of bill blackish shading to dark brownish horn color on sides and on lower mandible, different from the straw color in *I. exilis*; tarsi and feet also blackish to brown. From this it is apparent that the coloring of *neoxenus* is quite different from that of *exilis*, only some of the dark brown on the back of the latter being identical with the same colored areas on the wing of the former, as well as the greenish-black on the crown.—C. W. G. EFRIG, *River Forest, Ill.*

Willow Ptarmigan in Minnesota.—A specimen of the Willow Ptarmigan (*Lagopus lagopus lagopus*) was shot on April 20, 1914, at Sandy Island Lake of the Woods, Minnesota. Sandy Island is located in Section 21, Township 163, Range 36, of Warroad. This seems to be the first authentic record of the species in the state. The specimen is owned by Mr.

Steve Whitey of Crookston, Minn.—J. W. FRANZEN, *Minnesota Academy of Sciences, Minneapolis, Minn.*

Audubon's Caracara in New Mexico.—On May 4, 1914, Mr. Andrew Archer brought to my office a specimen of Audubon's Caracara (*Polyborus cheriway*) that had been shot by Mr. Harold Church from a cottonwood tree standing in an alfalfa field near Mesquite, N. M., below Las Cruces in the Rio Grande Valley. This specimen was an immature male not yet in typical color. In the stomach were found the almost completely digested remains of a small bird and a small rodent, whose identification could not be determined. The skin is now in the collection of the New Mexico College of Agriculture, at State College, N. M.

This constitutes the second established record of the occurrence of this species near here. Mr. E. W. Nelson, of the U. S. Biological Survey, kindly gave me the following note on its occurrence. "There is but a single other record, so far as we know, of this bird's occurrence in the State. This was one taken by Dr. Henry at Ft. Thorne in the winter of 1856 and sent to the U. S. National Museum." — D. E. MERRILL, *State College, N. M.*

Actions of the Red-tailed Hawk.—In 'The Auk' for 1913 (page 582) I described the very active defense of her nest offered by a Red-shouldered Hawk (*Buteo lineatus lineatus*). It may be recalled that two sets of eggs, April 6, and April 29, 1913, were collected from this pair of birds. I was then especially anxious to observe the birds the next year, and early in April I visited the Sawyer woods for this purpose. The birds flew from trees on the east side of the woods from which direction I was approaching. They were very noisy but flew high and no nests which seemed to be recently occupied were seen. On April 23 I again visited the woods approaching from the east, near the southern edge. Both birds met me at the edge of the woods and flew about with noisy screaming at some elevation as I walked westward. At the west side of the woods I turned and walked in a northeasterly direction directly towards the beech tree in which the first set of eggs were taken in 1913. The female was in a tree top near this beech and when I was possibly 200 feet away she launched herself directly at me. I could hardly conceive she would attack me as I stood on the ground, but she came straight on and I had to drop to my knees to avoid her blow. She alighted west of me and I walked on toward the nest, watching her over my shoulder. I had hardly stepped forward when she again dashed to the attack with more fierceness possibly than before and I again was compelled to drop to my knees. She came to rest about 30 feet from me in a small maple where she rested in a threatening attitude for some time while I stood admiring her. Her plumage was perfect, her breast being almost red, and her attitude of fearless defiance as she stood leaning toward me made a picture impossible to forget. She made no further attacks till I began climbing the tree when she struck at me viciously four times.

It is needless to say I kept her in sight all the time, keeping the tree between us as much as possible, and jerking my head out of the way to avoid her outreached claws. She made no attacks after the eggs were taken from the nest. The male left the woods or at least kept out of sight while the female was attacking me. Later he returned and the pair soared screaming at a considerable height. The eggs were three in number, incubation just begun, and as stated, were laid in the same nest occupied in April 6, 1913.

It may be added that I visited Mr. Sawyer, who owns the woods, explaining to him that the hawk would now be more wary, but even yet might fall an easy prey to any gunner and asking him to do what he could to prevent her being killed. Though apparently not very appreciative of the traits I so much admired in the bird, and my reasons for the preservation of her life, he promised to do what he could to prevent her being killed.

Other nests visited in 1914 were occupied in every case by wary and cautious birds. The conditions which developed the audacious daring of the one exception without at the same time costing her her life are not easily understood.—E. B. WILLIAMSON, *Bluffton, Ind.*

Richardson's Owl in Illinois.—Records of the occurrence of Richardson's Owl (*Cryptoglaux funerea richardsoni*) in Illinois, are so few that the following hitherto unpublished note, unimpaired, I hope, by age, may be of interest.

During the last week of January, 1887, in a period of great cold and deep snow, an owl of this species was caught by some school-boys in a farmer's barn near Sycamore (50 mi. west of Chicago) and brought to me alive. Identification was easy but I did not then appreciate the rarity or value of the specimen; and small stuffed owls being in great demand just then as parlor "what not" decorations, I sold this to a neighbor for the munificent sum of \$1.25, for that purpose.—L. E. WYMAN, *Museum of History, Science and Art, Los Angeles, Calif.*

An albinistic Bobolink.—While walking over a piece of prairie, near Stickney, southwest of Chicago, Mr. Kohmann, the taxidermist, and the writer saw an extremely queer-looking Bobolink. It appeared to be all white, but on closer inspection showed some checkering of black. This impression was found to be true, when it was taken. The buff of the nape is also white; some feathers on the crown and cheeks, on the sides of the breast, on the back and in the wings are black, but not in symmetrical arrangement, thus on one wing the fourth primary is the first black one, whereas in the other the first primary is black, while the tail is all white with the exception of the outermost section on one side. Altogether, it is a unique specimen.—C. W. G. ELFRIG, *River Forest, Ill.*

Leconte's Sparrow in Wisconsin.—Kumlien and Hollister in 'The Birds of Wisconsin' state concerning this species: "It is also rather remarkable that the closest search has failed to produce a single specimen in spring." On April 11, 1914, three were seen and one taken at Madison,

Wisc., April 13 one seen; and on April 15 two were taken. The above records would indicate that this species is a not uncommon spring migrant.—A. W. SCHORGER, *Madison, Wisc.*

The Evening Grosbeak at Portland, Maine.—I found seven Evening Grosbeaks (*Hesperiphona vespertina vespertina*), representing both sexes, in the Western Cemetery, Portland, early in the afternoon of April 16, 1914. It was a wintry day, and snow was falling at the time, with several inches of a fresh deposit on the ground. The birds were feeding on sumac fruit. They were easily approached but moved about with a peculiar abrupt activity, calling frequently and loudly.

Though the Evening Grosbeak is no longer a stranger in Maine, its occurrences have not been so frequent that another is without interest; and the middle of April appears to be a rather late date for it.—NATHAN CLIFFORD BROWN, *Portland, Maine.*

Two Species of Cliff Swallows Nesting in Kerr County, Texas.—The Mexican form of Cliff Swallow (*Petrochelidon fulva pallida*), described by Nelson, was found nesting by my collector near Japonica in Kerr County, Texas, during the month of June, 1914. He collected a series of birds and eleven sets of eggs. There was rather a large colony nesting in a cave. The entrance of this cave was like a mine shaft. The ceiling was covered with holes where the water had once eroded into the limestone rock. The Swallows nest in these holes, plastering a little mud like a balcony to hold the eggs in. A forty foot ladder was used to get up to them. The cave was poorly lighted and very damp. It was 50 feet from the floor of the cave to the ground, where the entrance was. The opening was about 8 ft. in diameter. About 10 feet down, the cave widened out into a spacious chamber. The only light was from the shaft-like entrance. To enter the birds pitched head first and diverged into the semi-dark chamber and began a detour of circles to check the impetus of their plunge.

The eggs are marked all over with fine markings of light to dark brown with a few spots of lilac.

I give the measurements of the eleven sets of eggs, in hundredths of an inch.

1. 77 × 57, 77 × 56, 81 × 58, 75 × 56
 2. 81 × 55, 78 × 58, 77 × 55, 77 × 55
 3. 83 × 55, 81 × 54, 73 × 54, 73 × 55, 78 × 54
 4. 76 × 56, 81 × 54, 84 × 57, 75 × 55
 5. 80 × 53, 77 × 54, 85 × 56, 78 × 55
 6. 76 × 54, 80 × 55, 81 × 57, 81 × 54
 7. 78 × 56, 76 × 57, 79 × 57, 77 × 56
 8. 76 × 56, 76 × 54, 79 × 57
 9. 82 × 56, 81 × 53, 85 × 54, 83 × 54
 10. 77 × 57, 77 × 54, 83 × 56, 76 × 54
 11. 68 × 54, 73 × 55, 80 × 55.
- Averages 43 eggs 77 × 55

In this connection I wish to state that in recording the occurrence of this bird in Texas (Auk, 1914, p. 401) I entirely overlooked Dr. Louis B. Bishop's previous record (Auk, 1910, p. 459).

A Colony of the Lesser Cliff Swallow (*Petrochelidon lunifrons tachina*) was found nesting not far from where *Petrochelidon fulva pallida* was breeding. Most of their nests were roofed over. They select a part of a perpendicular cliff that has a projection and plaster their nests up under this. On these rocky walls of the cañon there seem to be ridges, probably the high water mark in times of floods, where the rushing water has eaten into the face of the cliff, leaving a projecting shelf. This supplies a roof in rainy weather, which protects the nests.

My collector says, "The Lesser Cliff Swallows, I am pretty sure, carry the mud for building in their mouths, while the other one (*Petrochelidon f. pallida*) carry it in their feet. I judge this by the actions of the birds while alighting on a muddy spot and picking up the mud. The Lesser Cliff Swallows will dive into the mud with their tails up, just skimming the surface like a flock of teal, feeding in a shallow pond. They look as if they were standing on their heads, while the other swallow alights on the mud with head erect balancing himself by quivering his wings, while he settles his feet into the mud, then rises and flies straight to his nesting place."

The Lesser Cliff Swallow uses very little lining for his nest, sometimes not over two or three feathers, while the Coahuila Cliff Swallow, as a rule, gathers quite a lot of grass-roots and feathers.

The eggs of these Swallows vary in size as will be seen by the measurements, but the coloring is nearly alike, although the Lesser Cliff Swallow's is more heavily marked, while the feature of the other is the fine spots all over the egg instead of large blotches. These markings in the case of the Lesser Cliff Swallow are brownish, while in *pallida* they are light brown to dark brown and purple.

Measurements of fourteen sets in hundredths of an inch:

1. 80 × 56, 82 × 53, 80 × 52, 78 × 56, 79 × 52
2. 79 × 53, 69 × 53, 73 × 55, 75 × 55
3. 83 × 55, 75 × 56, 69 × 51, 79 × 53
4. 78 × 54, 83 × 55, 82 × 58, 83 × 57
5. 78 × 53, 77 × 52, 80 × 52, 77 × 56
6. 77 × 54, 77 × 56, 79 × 56
7. 77 × 55, 73 × 54, 73 × 55, 71 × 53
8. 74 × 54, 73 × 56, 71 × 52, 73 × 53
9. 91 × 57, 87 × 53, 91 × 52, 85 × 53
10. 78 × 57, 76 × 58, 76 × 56, 77 × 56
11. 76 × 54, 79 × 51, 77 × 52, 77 × 53
12. 80 × 55, 84 × 57, 82 × 58, 79 × 57, 82 × 57
13. 79 × 54, 76 × 57, 84 × 56, 78 × 58, 80 × 56
14. 76 × 53, 82 × 55, 79 × 53, 78 × 56

Average of 58 eggs. 80 × 54.—JOHN E. THAYER, Lancaster, Mass.

The Cape May Warbler in Eastern Massachusetts.— In view of the extreme rarity of the Cape May Warbler (*Dendroica tigrina*) in eastern Massachusetts, their occurrence in unusual numbers during the past autumn in Lexington, Mass., seems worthy of note.

Between Sept. 9 and 14, 1914, I met nine Cape Mays in four widely separated parts of the town,— three on the 9th, five on the 13th, and one on the 14th. Three of the birds were about my house in the town centre,— two in a maple, and one in a mountain ash tree. Three other birds frequented a red cedar pasture where I watched them for an hour. They kept close together, generally in the same tree, and passed repeatedly over a beat which included two or three acres. We met another individual on the border of a piece of woodland, and another in an isolated dead oak tree.

The birds showed a remarkable range of plumage; some, old males evidently, were almost as brilliantly marked with yellow and orange as in spring, others, birds of the year no doubt, were pale grey, streaked above and below with brown, and lacked all yellow except on the rump. The Cape Mays accompanied a heavy flight of migrants, composed chiefly of Bay-breasted and Magnolia Warblers.

Mr. William Brewster kindly sends me a record of three more Cape May Warblers which he saw in the nearby town of Concord, Mass. His dates extend materially the limits of the flight.

"August 31, ♀ in red cedar in berry pasture. Very tame.

"September 12, ♀ in oaks and larches. Very tame.

"September 30, ♀ spent several minutes in bush directly in front of our dining room window through which I viewed her at a distance of not over five feet. She was accompanied by three Black-polls."

Mr. Walter Faxon, who saw two of the Lexington birds, had previously met the Cape May Warbler but three times in this vicinity during twenty-eight years of constant observation.

Mr. William Brewster (Birds of the Cambridge Region 1906, pp. 329, 331) summarizing all the instances which his notes supply of the bird's occurrence in the Cambridge Region, says,— "It will be noticed . . . that during twenty-four — or two-thirds — of the total thirty-six years which the records cover, the beautiful bird was not noted at all, and that during eleven out of twelve years where it was observed only a single individual was seen each season. These facts appear to me to warrant the conclusion that the species is really one of the very rarest of the Warblers which visit us with any degree of regularity."

In his summary, which includes the records of many observers, he mentions but a single occurrence in this region in autumn.

From the evidence of Mr. Faxon's and Mr. Brewster's experience the flight of Cape May Warblers during the past autumn must be considered unprecedented.— WINSOR M. TYLER, M. D., *Lexington, Mass.*

The Records of the Tennessee and Cape May Warblers in South-western Maine.— Up to the summer of 1914 the Tennessee Warbler

(*Vermivora peregrina*) seems to have eluded the few observers who have looked for it in southwestern Maine. There is a bare mention, in a migration list published by the 'Journal of the Maine Ornithological Society,'¹ of its occurrence at Westbrook on May 30, 1902; and Mr. Arthur H. Norton is given as the authority for this. But Mr. Norton tells me that the record was made without his knowledge, through a typographical or editorial error, and that he has never seen the bird in the vicinity of Portland.

A Tennessee Warbler, apparently a male, came into my garden, with many other little migrants, on August 30, 1914, and, after giving for a long time only inconclusive evidence of his identity, flew to the lower branches of an old apple tree, amongst which I was standing, and displayed his specific characteristics at very close quarters. Constantly moving about, but unhurried and seemingly quite free from fear, he was several times within three feet of me on a level with my eyes, offering me in a good light a perfect opportunity for studying him, whilst he pecked at leaves and twigs, made futile little sallies a-wing in the attempt to snap up insects and voiced his feelings in subdued call-notes. His plumage was beautifully smooth, and he was very plainly recognizable.

Late in the afternoon of September 6, 1914, a Tennessee Warbler appeared in the same old apple tree. The flutterings of a moth which he had caught absorbed his attention, and he permitted me to approach him as near as I chose. I scrutinized him carefully, until he was chased away by a Myrtle Warbler,—long enough to note that he was indistinguishable in appearance from my visitor of August 30; and he may, of course, have been the same bird.

The writer obtained on Cape Elizabeth, August 21, 1876, the only specimens of the Cape May Warbler (*Dendroica tigrina*) which have thus far been taken in the vicinity of Portland, and there has since been no announcement to his knowledge, of other examples seen. Perhaps it is safe to assume that the species is a regular migrant; but for the present more data seem desirable in support of this hypothesis.

The Cape May Warbler passed at least four times through some of the gardens at the West End of Portland during September, 1914, and on these occasions the birds were so tame and leisurely that close inspection of them was easy. On the 3rd I detected one in a troop of Warblers. On the 10th one remained about my house the greater part of the day, alone, several times visiting a piazza roof, in the gutter of which rain water was standing, and at times foraging on the open lawn. Two came together on the 18th and with other Warblers, including the Parula, the Myrtle and the Black-throated Green, bathed long and fully in the spray of a sprinkler placed so as to play upon an apple tree about four feet high. They permitted themselves to be showered in the tree and also descended to a little pool under it where they splashed about vigorously. On the 21st I found

¹ Vol. VI, p. 79.

a solitary bird at the edge of a group of native spruce and hemlock saplings, near one corner of my garden.

This garden is a recent inclosure, and most of the trees and shrubs in it are young. One is disposed to believe that otherwise it would sooner have harbored examples of both of the warblers which form the subject of the present note.—NATHAN CLIFFORD BROWN, *Portland, Maine*.

Cape May and Tennessee Warblers in Philadelphia.—In 'Cassinia' for 1913 (p. 36) I recorded these two species in a small yard 20 by 40 feet in the rear of my home in the thickly built up section of West Philadelphia. A Tennessee Warbler on September 12, an adult and two young Cape Mays on September 21, and two young on September 30. During the autumn of 1914, they were still more frequently noted; a Tennessee on October 1, and two or three Cape Mays on September 14, 24, 25, October 12 and 20. The yard contains rose bushes and a patch of native shrubbery as well as a small tree. The birds spent most of their time in the rose bushes picking off the aphides and allowed me to approach to within a few feet of them. Numerous records of the Cape Mays have been made at a number of nearby localities, but these, well within the city proper seem particularly interesting.—WITMER STONE, *Academy of Natural Sciences, Philadelphia*.

San Lucas Verdin in Arizona.—In the October number of 'The Auk' (Vol. XXXI, p. 543) is a record of the San Lucas Verdin (*Auriparus flaviceps lamprocephalus*) taken by Mr. H. Wright at Mecca, Cal., March 19, 1911.

Recently I received a typical specimen of this little known species (Mus. H. K. C., No. 18003) which was taken 20 years previously, and bearing the original label of the collector, Mr. F. T. Pember: "collected at Gila Bend, Ariz., April 18, 1891, ♂ L. 4.30, Ex. 6.64, W. 2., T. 1.90 inches."

Gila Bend is a small place in southwestern Arizona, elevation 1000 ft. It is about 90 miles north of the Mexican line and 100 miles east of the Colorado River.

This bird is even smaller than the California specimen, and can instantly be recognized upon comparison with true *Auriparus flaviceps*.—HENRY K. COALE, *Highland Park, Ill.*

Bluegray Gnatcatcher nesting in Wisconsin.—On May 31, 1914, in company with Mr. Normann DeWitt Betts, I found a pair of Gnatcatchers (*Poliophtila cerulea cerulea*) nesting at Lake Waubesa, Wisc. This is probably close to the northern breeding limit for the interior of the state.—A. W. SCHORGER, *Madison, Wisc.*

Robin's Nests.—Last spring, when Robins were beginning to build nests, a farm laborer in Champaign Co., central Illinois, removed an old nest from the crotch of an apple tree, and place it upon the tongue of a binder in a shed, near the farm residence. Although a year old, weather-

beaten, and stripped of its loose interior furnishing, the nest was essentially intact. Its walls of dark clay were strongly reinforced with tough grasses, and the foundation, bearing the impress of the two branches between which it had been held, was unusually generous in its proportions. During the winter the nest doubtless had contained snow and water, which, owing to the small soil particles of the clay, probably escaped almost altogether through evaporation, for the nest as it stood would hold water like a cup. I should estimate its weight at fully 18 ounces. In our orchard in Missouri I used to observe a number of robins' nests in the spring that had successfully weathered the winter, and it had often occurred to me that the birds would exhibit commendable economy if instead of building new nests they would remodel the old structures; but if this ever was done it escaped my notice. However, the nest that the farm employee placed upon the harvester tongue attracted a pair of robins, and I observed the female sitting in it. She evidently was getting the feel of it, and deciding whether or not to accept it in preference to the labor required to construct a new one. Being interested in the matter I asked the proprietor of the farm to report to me a fortnight later what the pair had decided. He wrote that they had "taken it" for the season. I should like to know whether this is a common practice among robins, or any other species. Charles Dixon in his 'Birds' Nests,' first edition, published in 1902 by Grant Richards in London, says, on page 242: "... various species of swallows breed in the disused nest of the Oven-bird . . . We might almost presume that these birds have relinquished the habit of forming a mud shell or outer nest when they discovered that these mud 'ovens' saved them the trouble of making one for themselves." Purple Martins will year after year occupy the same house or box. It is but one step further to an old nest in the case of robins.—DEWITT C. WING, *Chicago, Ill.*

Two New Records for British Columbia.—LARK BUNTING (*Calamospiza melanocorys*). On June 8, 1914, I collected a male Lark Bunting in a thicket of hawthorns on the shore of Okanagan Lake at Okanagan Landing.

WHITE-THROATED SPARROW (*Zonotrichia albicollis*). On October 6, 1913, I collected a male White-throated Sparrow that was with a large flock of Nuttall's and Golden-crowned Sparrows at Saanich, Vancouver Island. Both these birds are now in the provincial museum.

SITKA KINGLET (*Regulus calendula grinnelli*). A female taken at Okanagan Landing, December 29, 1913, is the first record east of the Cascades. A series collected here in summer have been identified as *calendula* by Dr. Louis B. Bishop. There are no winter records for this form.

BLACK MERLIN (*Falco columbarius suckleyi*). On February, 1913, I collected a Pigeon Hawk at Okanagan Landing, identified as *suckleyi* by Mr. Allan Brooks. This form is a straggler east of the Cascades.

YELLOW-HEADED BLACKBIRD (*Xanthocephalus xanthocephalus*). Usu-

ally a scarce summer resident, this bird was unusually plentiful this year (1914). On July 28, I saw a flock of about 60, nearly all were adult males.— J. A. MUNRO, *Okanagan Landing, B. C.*

Some Unusual Breeding Records from South Carolina.—WOOD DUCK (*Aix sponsa*). In view of the alarming decrease in numbers of this species in recent years, the following record is of particular interest. On June 23, 1912, in the Otranto Swamp near Charleston, S. C., I found a brood of seventeen well grown young. This, I believe, is an unusually large number, as all of the authorities which I have consulted on the subject give the full complement of eggs as ranging from eight to fifteen. In this case it is probable that even more than seventeen eggs were laid as it must be rare indeed for a full set of eggs to be hatched and the young brought to the age of two or three weeks without casualty of any kind.

It has been suggested that two sets of eggs may have been laid in the same nest.

WOODCOCK (*Philohela minor*). Although Woodcock are known to breed sparingly in the coast region of South Carolina, definite records of breeding are few. On February 22, 1913, a female was shot at Summerville, near Charleston, S. C., and was found to contain several eggs the largest of which would probably have been laid the next day.

LOGGERHEAD SHRIKE (*Lanius ludovicianus ludovicianus*). While the Loggerhead often begins nest building in February, it is seldom that eggs are laid before the end of March, and I have never before known a pair to be successful in incubating during the inclement weather that usually prevails in the early part of that month. However, on March 30, 1913, I saw a young Loggerhead which could not be distinguished from its parents in size, and could be recognized as a young bird only by its actions and because it was being fed regularly. We had ample opportunity to watch this performance for the parents were busy catching insects while the young bird followed them closely and by fluttering and squawking, insisted upon having his share. Allowing twelve days for incubation and at least as many for the then age of the youngster—both of which estimates are probably very low—the full set of eggs must have been complete by March 6, if not earlier.—FRANCIS M. WESTON, JR., *Charleston, S. C.*

Notes on Some Birds of the Maryland Alleghanies; An Anomaly in the Check-List.—After a lapse of twelve years, the writer was fortunate enough to be able to again spend a week in the highest part of the Maryland Alleghanies, namely at Accident in Garrett County. This is the westernmost county of Maryland and the hamlet in question is about ten to fifteen miles northeast of Deer Park and Mountain Lake Park, the well-known summer resorts on the Baltimore and Ohio Railroad. The natural features of this so-called glade region of the Alleghanies, its beauty and attractiveness to the naturalist and nature-lover, have been more fully described in Vol. XXI of 'The Auk,' in the article headed: 'Birds of Western Maryland.' Excepting the melancholy fact that saw-mill and

narrow gauge had laid low some extensive stands of primeval spruce and hemlock, the country was little changed, the same fine air, the same dearth of mosquitoes, so welcome to the tired vacationist, the same mountains, which are here low and easy to get over, since the whole country is high. Thus George's Hill is the second-highest point in Maryland, 3004 ft. above sea-level, yet it is only 500 to 800 ft. higher than the adjoining lower land. The mountains nearly all run in long parallel ridges from southwest to northeast, the usually low depressions between some of them, are the glades, formerly the home of innumerable flocks of Wild Turkeys and Ruffed Grouse, of deer, panthers, bears and catamounts. The best known of these long mountains near Accident are Negro and Meadow Mountains. On the former the writer spent many delightful though laborious hours or days on former and on the present visit.

Knowing full well the psychological and other reasons against the reliability of testimony of this kind, I would say that the Magnolia Warbler (*Dendroica magnolia*) has somewhat increased in numbers as compared to twelve years ago. On July 7, Mr. F. Burkhard, a keen nature lover and observer of Accident, and the writer saw and heard about fifteen to twenty males; no doubt some males were not singing at this time of the year, it being an extremely warm day besides. They were found in the stands of primeval spruce and hemlock, which fortunately the lumbermen have so far not been able to secure, as well as on the crest of the mountain, where chestnut is the prevailing tree, interspersed with here and there a few spruce and hemlock. In the same kind of places the Black-throated Blue Warbler (*D. c. caerulescens* not *cairnsi*), and the Black-throated Green (*D. virens*) are found, both in about the same numbers as formerly; the former also descends into the rhododendron thickets of gullies lower down. The Carolina Junco (*Junco h. carolinensis*) is found in the open scraggy growth of chestnut along the flat and rocky crest of the mountain. Here the Pileated Woodpecker (*Phloeotomus p. abieticola*), the Scarlet Tanager and the Crested Flycatcher hold forth in undiminished numbers, also the Red-tailed Hawk and the Turkey Buzzard, while from the sides comes the bell-like chorus of Veery (*Hylocichla f. fuscescens*) and Wood Thrushes. One or two of the Turkey Buzzards seemed to follow us about for hours over the mountain; they probably had their young near by, as there is no lack of large hollow logs and cracks and crevices in the rocks, here and there piled up in huge masses, as if by titans. Canadian and Chestnut-sided Warblers (*Wilsonia canadensis* and *D. pensylvanica*) are found in bushy places, grown up with second growth deciduous trees and shrubs, the former has a fondness for wet places in such areas, usually very thickly grown over. A surprise awaited us in a depression between Negro and Meadow Mountains, half way between Bittinger and Accident. There is some fine tall spruce and hemlock, so thick that no direct sunlight reaches the ground, which is covered with rhododendron, many northerly species of plants, and some upturned roots of spruce. I was just about to remark, "If this were in Canada, we should now hear a Winter Wren," — the moss-

covered ground and the flattish upturned roots involuntarily produced this thought — when suddenly, clear and loud, rang out the beautiful notes of the Winter Wren. For a moment I was in doubt whether I was really in Maryland or in Quebec, but if nothing else, the luxuriant growth of rhododendron quickly dispelled any illusion. I had formerly never heard that song here, or if I did, I did not know it, and therefore did not put down this wren as a permanent resident for western Maryland, which it now turns out to be. The Bobolink, by the way, was also recorded for the first time for this vicinity, in a pasture near the village.

Now, as to the anomaly in the A. O. U. Check-List regarding a species of bird of the tops of our eastern mountains. For obvious reasons I did not collect many birds on this last trip. But the few I took confirmed a suspicion I had in my mind since my residence in that part of the country. I took two male *D. caerulescens*. I expected to find some pronounced black on the back, to fit in with the description of *D. c. cairnsi*, which, according to the Check-List in the resident variety, geographical race or subspecies. They were adult males in high plumage, well colored. But they were not *cairnsi*, as is borne out by a comparison with skins from Canada and Illinois. That brings us into this dilemma: Either *D. c. cairnsi* is not the prevailing form here, as stated in the Check-List, and *D. c. caerulescens* comes down to not only Pennsylvania, as stated there, but to Maryland; or we have *cairnsi* and *caerulescens* together here, which militates against the underlying principle of geographic races and subspecies; or the difference between the two is slight and not constant. If the last explanation is correct, as I am inclined to believe, I should favor doing away with the race *cairnsi* entirely.— C. W. G. EFRIG, *River Forest, Ill.*

The Status of the Song Sparrow and the Chipping Sparrow as Early Birds.— Since writing my notes on the 'Morning Awakening' printed in 'The Auk' for April, 1913, I have been paying particular attention to the awakening of the Song and Chipping Sparrows as evidenced by their earliest morning songs. These later observations confirm my conviction that these two birds are much later risers than the Robin. In fact, I should now place the Song Sparrow 25 or 30 minutes after the Robin, instead of only 13 minutes as my earlier observations made it. This discrepancy I account for by the greater care exercised in these recent notes in eliminating from consideration all sporadic night songs and including only the songs that indicated a permanent morning awakening.

The new records are of six mornings in 1913 and five in 1914, all at my house in West Roxbury, Mass. One Song Sparrow sang regularly both seasons very near the house, and often another could be heard not far away, while one or two Chipping Sparrows were always equally in evidence, and no Robin sang near enough to drown the songs of the sparrows. Strange to say, my notes include no records whatever of very early singing on the part of the Chipping Sparrow, which leads me to suspect that the nocturnal singing for which that species is well known may be chiefly confined, in

some localities at least, to the earlier part of the night. (About 10 o'clock in the evening is, I think, a favorite time.) The Song Sparrow, however, does often indulge in song in the very early morning, before he gives evidence of having awakened for the day. The records of the eleven mornings are as follows:—

May 14, 1913. Sunrise 4.24. Song Sparrow sang once at 3.24, then was silent till 3.58, when it began to sing continuously. Robin began at 3.25. Chipping Sparrow sang at 3.40, then was silent till 3.47, when it began to sing continuously. (This preliminary song was an unusual occurrence in my experience.)

May 31, 1913. Sunrise at 4.10. Robin singing when I awoke at 3.15. Song Sparrow sang at 3.20 and again at 3.27, and began frequent singing at 3.29. Chipping Sparrow began at 3.35.

June 1, 1913. Sunrise at 4.10. Robin singing at 3.12, when I awoke. Song Sparrow sang at 3.19 and again at 3.22, and began frequent singing at 3.24. Chipping Sparrow began at 3.32.

June 19, 1913. Sunrise at 4.07. I awoke at 2.45. Song Sparrow sang once at 2.47; another Song Sparrow sang once at 3.07; first bird sang again at 3.20, then at 3.29; second bird began a song-period at 3.48. Robin began at 2.50 (unusually early). Chipping Sparrow began at 3.29.

July 12, 1913. Sunrise at 4.18. Robin singing at 3.15 (estimated), when I awoke. Song Sparrow sang once at 3.30. Chipping Sparrow began at 3.35.

July 18, 1913. Sunrise at 4.23. Awoke at 3. Robin began at 3.42. Song Sparrow sang once at 3.52 and began continuous singing at 3.58. Chipping Sparrow began at 3.56.

April 10, 1914. Sunrise at 5.12. Song Sparrow began at 4.38. Robin began calling at 4.42 and singing at 4.43. The Song Sparrow on this early spring day thus awoke 34 minutes and the Robin 30 minutes before sunrise. As compared with late spring and early summer singing, the Robin was late rather than the Song Sparrow early.

May 29, 1914. Sunrise at 4.11. Robin began at 3.17. Song Sparrow had sung once about 10 minutes earlier but did not sing again till after 3.45. Chipping Sparrow began at 3.33.

June 10, 1914. Sunrise at 4.06. Cloudy and cold. Robin calling at 3.23; began singing at 3.24. Chipping Sparrow began at 3.40. Song Sparrow's beginning later and not noted.

June 14, 1914. Sunrise at 4.06. Robin began at 3.12. Chipping Sparrow sang once at 3.20, again at 3.26, and began morning song at 3.28. Song Sparrow sang twice at 3.41; began in earnest at 3.46.

June 17, 1914. Sunrise at 4.06. Out at 2.45 and listening carefully in all directions about my house for the earliest bird-notes. Nothing heard till 3.13, when Robin began. Chipping Sparrow sang once at 3.20; began in earnest at 3.23. Song Sparrow began at 3.40; another at 3.41. Just before 4.30 the two Song Sparrows were among the more conspicuous singers to be heard. Their failure to begin singing earlier than 3.40 was evidently not due to any marked waning of the song-impulse.

Averaging the eight definite records of the Song Sparrow's complete awakening included in the foregoing notes, I make it $29\frac{3}{4}$ minutes (practically an even half-hour) before sunrise. The average of nine records of the earliest song heard from this species is 45 minutes before sunrise. On eight mornings one or more Song Sparrow songs preceded at varying intervals the full awakening, and on three of these occasions the early songs preceded the Robin, but the average of these earliest songs is about 9 minutes later than the Robin, while the average of what I regard as the actual awakening of the Song Sparrow is 15 minutes later still. The situation is complicated a little by the fact that my Robins and Chipping Sparrows seem to be later risers than the average of their respective species. The average of the six definite records I got here in these two years for the height of the season (excluding the April 10 record) is only $53\frac{3}{4}$ minutes before sunrise, nearly 10 minutes later than the average obtained from my former observations. My Chipping Sparrows, too, with an average of 36 minutes before sunrise for ten mornings, are some 10 minutes later than my former average. On the other hand, I find that my Crows wake unusually early for this species, the average of eight records made in 1912, 1913, and 1914 being 42 minutes before sunrise, while my previous average from various localities was 34 minutes before sunrise, precisely the same as Mr. H. W. Wright's latest Jefferson, N. H., average ('The Auk,' XXX, 529, October, 1913). This may be because my post of observation is near a nesting-ground of Crows, but, taken in connection with the lateness of my Robins and Chipping Sparrows, it suggests that local or individual variation may account for all such differences. In the case of the Song Sparrow, however, my new notes, made with the matter of nocturnal singing definitely in mind, show a much greater difference, and though local or individual variation may play some part in it, I am moderately certain that it is chiefly to be accounted for by the more careful exclusion of night songs.

These observations strengthen my conviction that the Robin's well-established reputation as an early bird cannot be successfully assailed by either of the two sparrows in question. As to the four other birds which Mr. Wright in his paper of October, 1913, ranks ahead of the Robin, it may be pertinent to call attention to the fact that three of them — the Wood Pewee, Oven-bird, and White-throated Sparrow — are known to be addicted to this same habit of nocturnal singing. Mr. Wright gives good evidence that, on some occasions at least, the Wood Pewee deserves the high rank he gives it, but as to the Oven-bird and the White-throated Sparrow the evidence is not quite so clear. The flight-song of the Oven-bird, is, so far as my experience goes, peculiarly an afternoon and evening performance. I have heard it before noon, but only on rare occasions, and if I heard it in the very early morning I should instinctively regard it as left over from the evening before rather than belonging to the coming day. The White-throated Sparrow has been called the "Nightingale of the North." The last time I heard its morning awakening on its breeding-ground was on August 8, 1913, on Sunapee Mountain, N. H. It then sang

several times during the night, but its actual awakening followed that of the Hermit Thrush, which began singing at 4.02. The times noted were 4.08, 4.13, and 4.15, when frequent singing began.

I hope that more notes on the morning awakening may be made in many localities. Only thus can we get the data for accurate generalizations. And due allowance for the night-singing habit must be made in all such observations.—FRANCIS H. ALLEN, *West Roxbury, Mass.*

RECENT LITERATURE.

Cooke's 'Distribution and Migration of North American Rails.'¹

— In this important report Prof. Cooke presents a concise account of the geographic distribution and migration of the rails following the same plan adopted in his previous reports on the shore-birds, herons, etc. The bibliography of North American ornithology is becoming so enormous that it is practically impossible for the individual to compile with any degree of completeness such data as are here presented. The formation of such a card index as has been prepared by Prof. Cooke, from which reports like the present may be readily compiled, constitutes one of the most important pieces of work, from the standpoint of the ornithologist, that the U. S. Biological Survey has undertaken.

Maps showing graphically the summer and winter distribution of each species add greatly to the value of the report. The summary shows that 44 forms of rails and their allies occur north of Panama. Of these 21 are restricted to the West Indies and Middle America and two are stragglers from Europe leaving 21 forms occurring regularly in the United States.

The wanton slaughter of Soras and Clapper Rails by so called sportsmen has sadly reduced the number of these birds and the killing of 3000 of the former species on a 500 acre marsh on the James River, Va., in a single day, or of 10,000 Clapper Rails at Atlantic City, N. J., in a day, are incidents only too well known to those who were familiar with the practices of a few years ago.—W. S.

Wetmore on the Growth of the Tail Feathers of the Giant Hornbill.²— In this bird, as is well known, the middle pair of rectrices greatly exceed the others in length. The fact that the examination of a considerable series failed to show any in which more than one of the pair was fully

¹ Distribution and Migration of North American Rails and their Allies. By Wells W. Cooke. Bull. U. S. Dept. Agriculture, No. 128. Sept. 25, 1914.

² A Peculiarity in the Growth of the Tail Feathers of the Giant Hornbill (*Rhinoplax vigil*). Proc. U. S. Nat. Mus., Vol. 47, pp. 497-500. October 24, 1914.

developed led Mr. Wetmore to a careful study of the available specimens which demonstrated beyond question that this is the normal condition in the species. One of these long feathers develops and is retained for more than a year, probably for two. The other one does not appear until the first has attained its full growth. Upon the molt of the first feather the other takes its place, so that there is always one long feather — the right and left alternately — while the other one is always very much shorter and only partly developed.— W. S.

Chapman on New Colombian Birds.¹— In the present paper Dr. Chapman describes twenty-six additional new forms from the rich collections obtained by the several expeditions sent out, under his direction, by the American Museum of Natural History. The problems of distribution presented by a study of these collections demand for their solution additional material from Antioquia and eastern Panama and to secure this the Museum has sent out two additional collecting parties under Messrs. L. E. Miller and W. B. Richardson.

Dr. Chapman is sparing no pains to make his study of the Colombian avifauna thorough in all its details and the further his work progresses the more anxiously do we await the final report upon the subject.

The present contribution even though admittedly preliminary, is a welcome relief from the wretched descriptions of two or three lines with which our literature is becoming overburdened. Not only are the diagnoses here presented full and adequate, with appropriate discussion, but in many instances brief contrasted descriptions of all the known forms of a group are given with their respective geographic ranges.— W. S.

Shufeldt on the Young of *Phalacrocorax atriceps georgianus*.²— This paper consists of a detailed account of a young cormorant twenty-four hours out of the egg. While no generalizations are suggested the condition of the various organs is minutely described as well as the progress of ossification in various parts of the skeleton, making a permanent record of facts that may be used in future comparative study.— W. S.

'Alaskan Bird-Life.'³— Through the generosity of one of its members the National Association of Audubon Societies has been enabled to carry its

¹ Diagnoses of apparently new Colombian Birds. III. By Frank M. Chapman. Bull. Amer. Mus. Nat. Hist., XXXIII, Art. XL, pp. 603-637. November 21, 1914.

² Anatomical Notes on the Young of *Phalacrocorax Atriceps Georgianus*. By R. W. Shufeldt, M. D., extracted from a Report on the South Georgia Expedition. Sci. Bull. Mus. Brooklyn Inst. Arts and Sci., Vol. 2, No. 4, pp. 41-102. November 5, 1914.

³ Alaskan Bird-Life as Depicted by Many Writers. Edited by Ernest Ingersoll. Seven Plates in Colors and other Illustrations. Published by the National Association of Audubon Societies. New York, 1914.

educational work into the far off settlements of Alaska. The medium is an attractive booklet, containing well prepared accounts of the bird-life of the various portions of the territory compiled from the publications of Dall, Nelson, Grinnell, Osgood, Bishop, Bent, and other explorers of the extreme northwest; the 'Arctic Coastal District' being written by Mr. Nelson himself. The illustrations consist of half-tones, and colored plates from the series of 'Educational Leaflets' published by the Association, each being accompanied by its respective text.

This little volume is to be freely distributed among the people of Alaska, in the effort "to cultivate a better appreciation of the value to mankind of our wild birds and animals."

The book is admirably adapted to its purpose and should go far toward preserving an interesting and valuable fauna.— W. S.

Mrs. Bailey's 'Handbook of Birds of the Western United States.'
— **Fourth Edition.**¹— The excellence of Mrs. Bailey's well known 'Handbook' as well as the increased interest in ornithology through our western states are attested by the issue of a fourth revised edition of the work. While the main text is the same, important additional matter is contained in the 'Addenda.' The changes made in the nomenclature of the American Ornithologists' Union Check-List are summarized, and lists of species to be added and eliminated are given, as well as a complete list of the birds of the western United States with their ranges, as they appear in the third edition of the Check-List. There is also an additional list of 'Books of Reference' bringing the bibliography up to date. All of these improvements tend to make this authoritative work still more indispensable to the student of western bird life.— W. S.

McIlhenny's 'The Wild Turkey and Its Hunting.'²— This work consists of two parts. Chapters III and IV treating respectively of 'The Turkey Prehistoric' and 'The Turkey Historic' are by Dr. R. W. Shufeldt; while the remainder, dealing with the hunting of this famous game bird and its actions in its native haunts, is compiled by Mr. McIlhenny, largely from the manuscripts of the late Charles L. Jordan, a life long turkey-hunter and manager of the Morris game preserve at Hammond, La. In his introduction Mr. McIlhenny says, "After Mr. Jordan's death . . . I secured his notes, manuscript, and photographic plates of the wild turkey,

¹ Handbook of Birds | of the | Western United States. | Including | the Great Plains, Great Basin, Pacific Slope, and | Lower Rio Grande Valley. | By | Florence Merriam Bailey. | With thirty-three full-page plates by | Louis Agassiz Fuertes, and over six | hundred cuts in the text. | Fourth Edition, Revised. | Boston and New York. | Houghton, Mifflin Company. | Riverside Press, Cambridge. | 1914. 12mo, pp. i-li+1-570. \$3.50 net, postpaid \$3.69.

² The Wild Turkey | and Its Hunting. | By | Edward A. McIlhenny. | Illustrated from photographs. | 12mo, pp. i-viii+1-245, 20 plates. Doubleday, Page & Co., Garden City, New York. \$2.50 net.

and with these, and my knowledge of the bird, I have attempted to compile a work I think he would have approved. . . . I have carried out the story of the wild turkey as if told by Mr. Jordan, as his full notes on the bird enable me to do this."

Mr. Jordan had long been contemplating the publication of a book on the turkey and Mr. Mellhenny's aim has been to carry out his intentions. In this he seems to have been eminently successful and the habits, habitats, and calls of the bird are fully described while methods of hunting and calling the turkey as well as of cooking it, are treated in a manner calculated to interest the sportsman.

Dr. Shufeldt's account of the fossil turkeys is largely reprinted from his recent paper in 'The Auk,' while in his historical account the several races and their ranges are differentiated, and the anatomy and the eggs of the species, the early historic records, and the relation of the wild and domestic forms are discussed.

Much of the contents of the book appeared serially in 'Out Door World and Recreation.' — W. S.

Mathews' 'Birds of Australia.'¹ — The fourth volume of Mr. Mathews' work begins with the Anseriformes and the author presents a general review of the classification of these birds and the probable relationship and origin of the various Australian genera. His studies lead him to the recognition "that the hypothesis that the Australian Fauna considered as a whole reached the continent from the north has been rejected by nearly every recent worker in other branches" while he thinks "that all the available evidence points to *Antarctica* as a stepping stone" between South America, New Zealand and Australia. This however, is not necessarily his final view as he promises further consideration of the question, later.

The systematic treatment of the species follows the plan of the other volumes and both text and plates maintain their high standard. No new names appear in this installment. — W. S.

Kuroda's Recent Ornithological Publications.² — Mr. Nagamichi Kuroda has published a number of contributions to ornithology during the past few years. Most of these refer to the birds of Japan but two handsomely printed brochures on the *Anatidae* cover the species of the world.

¹ The Birds of Australia. By Gregory M. Mathews. Vol. IV, Part I, Witherby & Co., 326 High Holborn, W. C. October 6, 1914. pp. 1-80, pl. 200-209.

² Ducks of the World. By N. Kuroda. The Ornithological Society of Japan. 1912. pp. 1-64 + 1-2, 6 plates.

Geese and Swans of the World. By N. Kuroda. The Ornithological Society of Japan, 1913. pp. 1-118 + 1-2, 9 plates.

A Hand List of the Birds of Haneda and Tsurumi near Yokohama. [By N. Kuroda]. August, 1913. pp. 1-11.

Nests and Eggs of Japanese Birds. Including Formosa, Saghalin and Corea. By Nagamichi Kuroda. April 10, 1914. pp. 1-31.

These are illustrated by half-tone plates, some of them in colors. While the technical names are in Latin and some of the data in English, the main portion of the text is in Japanese which renders the publications difficult to consult. The general typography and make-up leave little to be desired.—W. S.

The Annual Report of the National Association of Audubon Societies.¹—When one looks over the bulky report of the Association for the year 1914 and reads of receipts and expenditures totalling \$90,000, and then harks back some eighteen years, when two State societies and some scattered individuals were struggling along, with scarcely any receipts but unlimited opportunities for expenditures, it seems hard to realize the tremendous breadth and power of the organization that has developed from the hard work of these few pioneers.

We cannot do justice to the report in the short space of a review and recommend that all of our readers study it in detail. We shall merely call attention to some of the more salient features. Among publications distributed during the year, are 2,358,000 educational leaflets, 2,078,000 colored bird pictures and 1,619,000, outline drawings for coloring.

On the protected gull colonies of Maine it is estimated that there were in 1914, 59,420 adult Herring Gulls and in the Laughing Gull colonies in the south 118,400 individuals, besides other species in proportionate numbers.

The Junior Audubon Societies have a total enrollment to date of 115,039 members and subscriptions for the continuance of this work during the year have been made — \$5000 by Mrs. Russell Sage for the south and \$20,000 by an unnamed patron for work in the northern schools.

A new department of "Applied Ornithology," has been started with Mr. Herbert K. Job in charge, with the object of instructing the public in practical methods of attracting birds and in raising wild game birds.

Trained field agents of the Association — Messrs. Arthur H. Norton, Winthrop Packard, Katharine H. Stuart, Eugene Swope, and William L. Finley present reports of great interest and the reports of secretaries of twenty-five State societies close this most encouraging record of bird protection.—W. S.

Recent Literature on Bird Protection.—Three publications of the U. S. Department of Agriculture deserve notice in this connection. 'Bird Houses and How to Build Them'² by Ned Dearborn is a welcome pamphlet giving just the information that hundreds of people are asking for in connection with their efforts to attract birds to their grounds. The usual publication 'Game Laws for 1914'³ contains a convenient summary of game legislation throughout the United States and Canada, revised to date. A third Government publication is the 'Report of the Gover-

¹Tenth Annual Report of the National Association of Audubon Societies, Inc. Bird-Lore, Nov.-Dec., 1914, pp. 481-565.

²Farmers' Bulletin, No. 609, published September 11, 1914.

³Farmers' Bulletin, No. 628, published October 20, 1914.

nor of Alaska on the Alaskan Game Law,' with an appendix giving all information relative to hunting and collecting in the territory.

'California Fish and Game,' a new publication of the State Fish and Game Commission,¹ contains many timely articles including one by Joseph Grinnell on 'Bird Life as a Community Asset' which is well worth careful perusal. The 'Hingham Journal' for October 2, 1914, states editorially that thanks to the efforts of Mr. Alexander Pope an extensive bird sanctuary has been established in Hingham, Mass.

Mr. W. L. Finley's 'Oregon Sportsman' and the 'Bulletins' of the District of Columbia and New Jersey Audubon Societies continue to keep the public interested in matters of bird and game preservation in their respective communities.

'Bird Notes and News,' the British quarterly, is full of information on the plume trade and bird protection abroad. The autumn number conveys the unwelcome information of the failure of the plumage prohibition bill to come to a final vote in Parliament on account of the war. The passage of the bill was assured but the policy of delay so successfully carried out by its opponents, which under ordinary circumstances would have had no ultimate effect, has under the extraordinary conditions now prevailing, caused its adoption to be postponed until another session.—W. S.

Studies in Egg Production in the Domestic Fowl.—The Staff of the Maine Agricultural Experiment Station have continued their investigations on this important problem and some of their recent publications contain data of considerable interest to students of inheritance as well as to ornithologists and such oölogists as concern themselves with anything beyond the external shell of the egg. In a paper by Drs. Raymond Pearl and Frank M. Surface² it is ascertained that eggs are relatively more variable in length than in breadth and considerably more in shape than in either of the linear dimensions while in weight and volume they vary more than in any of the other characters.

The whole process of egg laying is analyzed and many interesting data are presented.

A paper on somewhat similar lines by Maynie R. Curtis³ discusses the variation among eggs of the same bird and in eggs laid in consecutive months, and the individuality of eggs of the same bird.

Dr. Pearl also discusses 'Improving Egg Production by Breeding'⁴ and 'The Brooding Instinct in its Relation to Egg Production.'⁵—W. S.

¹ Edited by H. C. Bryant, Museum Vert. Zool., Univ. of Cal., Berkeley, Cal.

² Variation and Correlation in the Physical Characters of the Egg. U. S. Dept. of Agriculture, Bureau of Animal Industry, Bull. 110, pt. III. July 31, 1914.

³ Factors Influencing the Size, Shape and Physical Constitution of the Egg of the Domestic Fowl. (Reprinted from Ann. Report, Maine Agr. Exper. Sta., 1914.)

⁴ Reprinted from Ann. Report, Maine Agr. Exper. Sta., 1914.

⁵ Reprinted from Journal Animal Behavior, July-Aug., 1914.

Birds as Carriers of the Chestnut-Blight Fungus.¹—Birds have been charged with distributing various plant diseases, but their relation to chestnut blight is the only case of this nature that has been scientifically investigated. The writers of the article here cited examined 36 birds belonging to 9 different species which were collected among diseased chestnuts in Pennsylvania. Using a most careful and thorough technique, they found that of the 36 birds tested 19 were "carrying spores of the chestnut-blight fungus. The highest positive results were obtained from two Downy Woodpeckers, which were found to be carrying 757,074 and 624,341 viable spores of *Endothia parasitica*. The next highest was a Brown Creeper with 254,019 spores." (p. 412). The other birds upon which spores were found were the Golden-crowned Kinglet, Junco, White-breasted Nuthatch, and Sapsucker. Three species, the Black and White Creeper, Flicker, and Hairy Woodpecker gave negative results. It was found also that the birds carried spores of a large number of fungi other than that producing chestnut-blight.

The authors conclude that "birds in general are important carriers of fungous spores," and that in particular "birds which climb or creep over the bark of chestnut trees are important agents in carrying viable pycnospores of the chestnut-blight fungus, especially after a period of considerable rainfall."

"Birds are probably not very important agents in spreading the chestnut blight locally, on account of the predominance of other and more important factors of dissemination, as, for example, the wind."

"The writers believe, however, that many of the so-called 'spot infections' (local centers of infection isolated from the area of general infection) have had their origin from pycnospores carried by migratory birds. Some of the birds tested were not permanent residents of eastern Pennsylvania, but were shot during their migration northward. These, no doubt, carry spores great distances. Each time the bird climbs or creeps over the trunk or limbs of a tree some of the spores may be brushed off and may lodge in crevices or on the rough bark. From this position they may be washed down into wounds by the rain and may thus cause infections." (p. 421).

The findings of this paper are based upon unimpeachable evidence and the conclusions must be accepted at face value. Nevertheless, the part birds play in the general spread of this disease is so small that it will never be seriously urged as a reason for diminishing bird protection.—W. L. M.

Reichenow's "Die Vögel."² The second volume of this important work was distributed on October 24. It follows the plan of volume one,

¹ Heald, F. D., and Studhalter, R. A., Journ. Agr. Research, II, No. 6, Sept. 1914, pp. 405-422, Pl. XXXVII, 2 figs.

² Die Vögel. Handbuch der Systematischen Ornithologie von Anton Reichenow. Zwei Bände. Zweiter Band. Mit 273 text bildern gezeichnet von G. Krause. Verlag von Ferdinand Eube. Stuttgart, 1914. Svo. pp. 1-628. Price, M. 18.40.

citing nearly all of the important genera and a fairly representative list of species under each, although some of the most common North American species, such as the Downy Woodpecker, are omitted. The text illustrations are numerous, well chosen, and admirable both in execution and in reproduction.

With the completed work before us Dr. Reichenow's classification can be better understood than from the outline given in Vol. I.

He divides the birds primarily into I, Ratitæ; II, Natatores; III, Grallatores; IV, Cutinares; V, Fibulatores; and VI, Arboricolæ. The limits of the first three groups are easily understood. The others can be best appreciated in tabular form as follows:

4. Reihe: Cutinares
Ord. Deserticolæ (*Turnicidæ*, *Thinocoridæ* and *Pteroclidæ*)
Crypturi (Tinamous)
Rassores (Gallinaceous birds)
Gyrantes (Doves)
Raptores (Vultures, Hawks and Owls)
5. Reihe: Fibulatores
Ord. Psittaci (Parrots)
Scansores (Woodpeckers, Toucans, etc., and also Trogons and Cuckoos)
6. Reihe: Arboricolæ
Ord. Insessores (Hornbills, Kingfishers, Hoopoes, Rollers, Motmots, Bee-eaters, etc.)
Strisores (Nightjars, Swifts and Hummingbirds)
Clamatores (in the usual sense)
Oscines (including the Lyre-bird and the true song-birds)

Such a classification takes us back a good many years, to the time when characters of bill and feet were the basis of our systems. It was this fact and the ignoring of various generally recognized relationships that caused us to refer to the classification as conservative in reviewing Volume I. It was perhaps unfair, however, to make this remark without setting forth the underlying principles of Dr. Reichenow's system which we preferred not to discuss until the whole work was before us.

Briefly his views, as we understand them, are, that in order to become acquainted with the great multitude of bird species it is necessary to arrange them in a system wherein each one finds its place through a successive subdivision of groups from orders down to species. Further that such a system for general, practical use had better be based upon more or less obvious external characters, than upon deep seated phylogenetic characters which are not recognizable without dissection and minute study. He does not belittle the importance of the latter but does not regard them as practical for a "logical system." Indeed he states definitely that "System and Genealogy have absolutely different ends in view and must advance side by side."

While these premises make criticism of the "system" to a great extent impossible we nevertheless cannot agree with the principle. Such a stand is absolutely opposed to the modern views of classification, and we fail to see why we are better off in grouping together two species which are superficially alike when we know that they have sprung from very different stocks, and have converged through the action of similar necessities of life or environment. Even the popular student would, we think, prefer to know that a system reflected the actual phylogenetic relationship of the groups, even though he were unable to see similarities in a cursory examination of the species.

No linear arrangement such as is necessitated in a book can be truly accurate phylogenetically or "systematically" but we see no need for two arrangements and consider that the best "system" is a phylogenetic one.

Apart from the nature of the "System" the uniting of a number of families into several composite groups it seems to us serves no purpose, especially when the larger groups are put in different primary divisions; as the "Scansores" and "Insesores," of Dr. Reichenow's system. The reduction in the number of families is on the same line and we can see no advantage in uniting the *Phytotomidae* and *Cotingidae*; the *Tyrannidae*, *Pipridae* and *Oxyrhynchidae*; or in the grand amalgamation of *Timaliidae*, Wrens, Mockers, Thrushes and Old World Warblers under the family name of *Sylviidae*!

More misleading still is the disposition of some of the genera. The removal of *Vireosylva* from the *Vireonidae* to the *Mniotiltidae* is certainly not due to any obvious external characters. And the appearance in the latter family of the genera *Rhodinocichla*, *Phaenicophilus*, and *Tachyphonus* is hardly less unfortunate, especially in the case of *Rhodinocichla* which Dr. Hubert Lyman Clarke has shown pretty conclusively to be Tanagrine in its affinities. (Auk, 1913, p. 11.)

While, as said before, we can see no reason for a system such as Dr. Reichenow advocates, nevertheless if we adopt such a system, it would, it seems to us, have been more consistent to have carried it further and placed the swallows in the same group with the swifts, and to have recognized several other obvious cases of external resemblance.

However, no matter what system is adopted 'Die Vögel' fills a long-felt want in presenting the more important genera and species in a concise manner under each family as well as furnishing in a convenient form a vast amount of valuable information. It will thus take its place among the standard works of reference on the birds of the world — a broad field truly, but one which Dr. Reichenow is eminently fitted to cover.— W. S.

Second Report on the Food of Birds of Scotland.— In 1912 Miss Laura Florence published analyses of the contents of 616 stomachs of Scottish birds. Now a report¹ has appeared upon the continuation of that work. It includes analyses of 1390 stomachs representing 81 species.

¹ Trans. Highland and Agr. Soc. Scotland. Fifth Series, Vol. XXVI, 1914, pp. 1-74.

Some of the species most numerous represented are Starling, 107 stomachs, Rook, 288, and Black-headed Gull, 137. The results are given in numerical form and the identification of items is in most cases very definite. Summaries for the various species note the number of stomachs containing items of various economic groups.

The preface explains why no percentage system is used in the following passage quoted from Mr. C. F. Archbald: "it would be unwise to attempt to show the proportion in which the components of their food are consumed because individuals of the same species vary much according to opportunity and their own particular fancy. For this reason it would require records extending over several years, and including observations on an enormous number of birds from different localities, to enable us to draw any definite conclusions as to the proportionate amount of good and harm with which each species should be credited."

This is the theoretical opinion of one who has not given percentage methods a thorough trial. As a matter of fact even a moderate number of stomachs will give results as to proportions of principal items of food that will not materially be changed by doubling or trebling the number of stomachs. Moreover every economic investigation should aim at ultimate completeness, and it is just as well to do the earlier work in the style that must eventually be adopted for handling a large mass of data.

Among the general conclusions are the following: the Starling and the Rook are too numerous; the Herring Gull is spending more time inland and feeds extensively on grain; it and the Common Gull (*Larus canus*) should be left unprotected until their numbers have greatly decreased; the Black-headed Gull is beneficial.—W. L. M.

Feilden on Birds of Trinidad and Tobago.¹—This paper contains notes on 35 species; about 300 are known from these islands. Notes on the food of several species are included, though few of them are very definite. The most interesting annotation refers to the Oil-bird (*Steatornis caripensis*). It is as follows: "The food consists of fruit and berries. It is the only fruit-eating night bird. It feeds on the wing, picking off the fruit as it passes the tree. The stones of the fruit are subsequently ejected from the mouth. A species of palm *Thrinax argentea* growing in the Botanic gardens was visited nightly by these birds to the number of three or four as long as the tree remained in fruit. As the only known colonies of these birds are on the north coast of the island, it is probable that they made the long journey nightly in order to secure food. The Guacharo . . . is of economic value, the young becoming very fat when about a fortnight old. They are then collected and the fat melted down into a colorless oil which is used for purposes of cooking and illumination" (pp. 31-32). With all the modern methods of producing light, it would seem the Oil-bird might be excused from serving as a substitute.—W. L. M.

¹ Feilden, G. St. Clair, Notes on some birds of Trinidad and Tobago. Bull. Dept. Agr. Trinidad and Tobago, Vol. xlii, Jan. 1914, pp. 25-33.

The Ornithological Journals.

Bird-Lore.¹ Vol. XVI, No. 5. September-October, 1914.

Some Observations on Bird Protection in Germany. By William P. Wharton.—A visit to the estate of Baron von Berlepsch, describing the use of nesting boxes, etc., and the pruning of shrubs so as to produce crotches suitable for nest building.

An Island Home of the American Merganser. By Francis Harper.

Impressions of the Voices of Tropical Birds. V. By Louis Agassiz Fuertes.—Toucans, Cuckoos, Trogons, Motmots, etc., described and figured.

Migration of North American Sparrows includes Worthen's and the Texas Sparrows and the Green-tailed Towhee.

The 'Notes' and Audubon Department are particularly full and instructive. The educational leaflet by H. K. Job describes the Pintail.

Bird-Lore. Vol. XVI, No. 6. November-December, 1914.

Bird Life in Southern Illinois. By Robert Ridgway.—The first of a series of three articles describing his properties and the methods that have been taken to increase wild bird life thereon.

Impressions of the Voices of Tropical Birds. By Louis Agassiz Fuertes.—The concluding installment covering, the Parrots, Guans, Pigeons, etc.

On the Trail of the Evening Grosbeak. By Arthur A. Allen. Studies of the birds at Ithaca, N. Y. February-May, 1914, with a series of remarkably successful photographs.

The Juncos form the subject of the North American Sparrow installment and the educational leaflet treats of the Crow.

The Annual Report of the National Audubon Society (noticed on p. 117) occupies nearly half of this bulky number.

The Condor.² Vol. XVI, No. 5. September-October, 1914.

The Nesting of the Spotted Owl. By Donald R. Dickey — *Strix occidentalis occidentalis* in Ventura, Cal. Excellent illustrations.

Henry W. Marsden. By Louis B. Bishop.—An appreciative obituary.

Notes on a Colony of Tri-colored Redwings. By Joseph Mailliard.

Bird Notes from the Sierra Madre Mountains, southern California. By H. A. Edwards.

A Study of the Status of Certain Island Forms of the Genus *Salpinctes*. By H. S. Swarth.—The treatment of the A. O. U. Check-List endorsed in preference to that of Ridgway. *S. guadeloupensis proximus* from San Martin Island, L. Cal., is described as new (p. 215).

¹ Organ of the Audubon Societies. Edited by F. M. Chapman. Published by D. Appleton & Co., Harrisburg, Pa. (Bimonthly) \$1 per year.

² Edited for the Cooper Ornithological Club by Joseph Grinnell. Published at The Condor office, First Nat. Bank Building, Hollywood, Cal. (Bimonthly) \$1.50 per year.

A Survey of the Breeding Grounds of Ducks in California in 1914. By H. C. Bryant.—A valuable summary of careful field investigations undertaken in the interest of game conservation. The evidence shows conclusively that the breeding ducks of the State are decreasing owing to the reclamation of marsh lands and excessive shooting.

A Method of Cleaning Skulls and Disarticulated Skeletons. By F. H. Holden.—A valuable taxidermical contribution.

The Wilson Bulletin.¹ Vol. XXVI, No. 3. September, 1914.

The Prothonotary Warbler at Lake Okoboji, Iowa. By T. C. Stephens. Habits of the Old-Squaw (*Harelda hyemalis*) in Jackson Park, Chicago. By Edwin D. Hull.

The Kentucky Warbler in Columbiana County [Ohio]. By H. W. Wersgerber.

Spring Migration (1914) at Houston, Texas. By George Finlay Simmons.

The Pine Siskin Breeding in Iowa. By W. J. Hayward and T. C. Stephens.

The Oölogist.² Vol. XXXII, No. 9. September 15, 1914.

Fall Migration of the Olive-backed Thrush, 1912. By Paul G. Hawes.—While Prof. W. W. Cooke has shown in his various papers that observations at one locality only, throw but little light upon the direction of migration as a whole, and that temperature has but little to do with the problem, nevertheless Mr. Hawes will find that his theory corresponds with the migration route of the Olive-backed Thrush as worked out carefully by Prof. Cooke from abundant data some ten years ago (see Auk, 1905, p. 1). One may be pardoned for wondering how the birds mentioned by Mr. Hawes as flying 150–200 feet overhead without stopping could be positively identified specifically.

The Oölogist. Vol. XXXII, No. 11. November 15, 1914.

A List of Birds Observed in the Big Hole Basin, Montana. By E. R. Forrest.

Blue-Bird.³ Vol. VII, No. 1. October, 1914.

The White Ibis. By O. E. Baynard. Excellent illustrations.

Blue-Bird. Vol. VII, No. 2. November, 1914.

Bird Friends in a City Back Yard. By L. S. Loveland, Lincoln, Nebraska.

The Black Vulture. By O. E. Baynard.—In Florida.

The Ibis.⁴ X Series. Vol. II, No. 4. October, 1914.

On *Herodias eulophotes* Swinhoe. By Tom Iredale.

¹ Edited for the Wilson Ornithological Club by Lynds Jones, Oberlin, Ohio. (Quarterly) \$1 per year.

² Edited and published by R. M. Barnes, Lacon, Ill. (Monthly) \$1. per year.

³ A Monthly devoted to Junior Audubon Classes and Nature Study Work Edited by Eugene Swope, 4 W. 7th St., Cincinnati, Ohio. 50 cts. per year.

⁴ Edited for the British Ornithologists' Union by W. L. Selater. Published by Wm. Wesley and Son, 28 Essex St., Strand, London, W. C. (Quarterly) £ 1. 12s. per year.

Some Remarks on the Subspecies of Crested Larks (*Galerida cristata*) found in Egypt. By M. J. Nicoll.

With the Tropic-birds in Bermuda. By Karl Plath.—Some excellent illustrations and a popular account of this much studied bird.

The Spring Migration at Chinwangtao in North-east Chihli. By J. D. La Touche.—A continuation of the author's studies of bird migration in Northern China published in Bull. B. O. C., XXIX, pp. 124-160.

A Note on the Breeding of the White-rumped Swift (*Micropus pacificus*). By H. L. Cochrane.

Notes on Birds observed in the South Pacific Ocean during a voyage from Sydney to Valparaiso. By C. F. Belcher.

The Birds of Prince's Island. By D. A. Bannerman.—This is the first of five papers covering collections made by the late Boyd Alexander during his last expedition to Africa.

The Gannetry at "The Stack," Orkney Islands. By J. H. Gurney.

Bulletin of the British Ornithologists' Club.¹ No. CC. November 4, 1914.

The following are described as new. By Hon. Walter Rothschild: *Casuarus papuanus goodfellowi* (p. 7), Jobi Island. By Messrs. Rothschild and Hartert: *Accipiter (Astur) eudiaboli* (p. 8), Babooni, British New Guinea. By Mr. Ogilvie-Grant from Utakwa River, Snow Mts., Dutch New Guinea; *Oreopsittacus arfaki major* (p. 11); *Neopsittacus muschenbrocki alpinus* (12), and *Psittacella modesta collaris* (p. 13). Also by Mr. Grant; *Alcyon richardsi bougainvillei* (p. 13) and *A. r. aolae* (p. 13) from Bougainville and Guadalcanar, Solomon Isls.

Dr. Hartert describes *Egretta dimorpha* (p. 14), Madagascar; and *Nycticorax cyanocephalus falklandicus* (p. 15), Falkland Islands.

Mr. E. C. Stuart Baker proposes *Trichalopteryx erythrolaema woodi* (p. 17), Loi Sing, N. Shan States; *Ixulus flavicollis baileyi* (p. 17), Mishmi Hills; *Ithaginis tibetanus* (p. 18), Sela Range above Tavanz and *Tragopan blythi molesworthi* (p. 18), Dangan La, Tibet.

Mr. Claude Grant describes *Pterocles quadricinctus lowei* (p. 19), Renk, White Nile; *Streptopelia senegalensis sokotrae* (p. 19), Hadebu Plain, N. Sokotra and *Poicephalus meyeri naevii* (p. 19), Kahili Valley, Belgian Congo.

Lord Brabourne and Mr. Chubb describe *Buarremon matucanensis*, (p. 20), Matucana, Peru; and *Upucerthia juninensis* (p. 20), Junin, Peru.

British Birds.² Vol. VIII, No. 4. September 1, 1914.

A Report on the Land Rail Inquiry. By H. G. Alexander.

Rüppell's Warbler in Sussex. A New British Bird. By H. W. Ford-Lindsay.

British Birds. Vol. VIII, No. 5. October 1, 1914.

¹ Edited by D. A. Bannerman. Published by Witherby & Co., 326 High Holborn, London, W. C. 6s. per year (nine monthly numbers).

² Edited by H. F. Witherby, 326 High Holborn, London, S. W. (Monthly), 10s., 6d. per year.

Increase and Decrease in Summer Residents. By M. Vaughan.

British Birds. Vol. VIII, No. 6. November 2, 1914.

Cormorants in Norfolk. By Miss E. L. Turner.— Illustrated.

Avicultural Magazine.¹ Vol. V, No. 11. September, 1914.

Notes from the Zoological Gardens [London]. By D. Seth-Smith.

Glimpses of South American Ornithology. By Lord Brabourne.— Notes on the character of bird-life in various parts of the continent collected during a residence of six years.

Avicultural Magazine. Vol. V, No. 12. October, 1914.

The Rufous-necked Laughing Thrush (*Dryonastes ruficollis*). By D. Seth Smith.— With good color plate.

Some Canadian Birds. By H. B. Rathborne.— This paper describes the writer's bird observations on a trip through the United States and Canada. Despite the title nearly half of it treats of "Fairview" [= Fairmount] Park, Philadelphia, where the author discovered "a spring in a dell surrounded by brambles" where he was able to observe the habits of Swainson's Warbler, a bird by the way unknown north of the cane brakes of our southern states! It is remarkable how some of our British visitors ignore the A. O. U. Check-List and a full century of American ornithological literature when they come to write up their trips!

Avicultural Magazine. Vol. VI, No. 1. November, 1914.

Bird Keeping in China. By Alex. Hampe.

The Emu.² Vol. XIV, Part 2, October, 1914.

Rarer Birds of the Mallee. By F. E. Howe and T. H. Tregellas.— With photographs of nests including one of the feather-decked nests of the Honey-eater (*Glyciphila albifrons*).

Bird Life in the National Park, N. S. W. By E. B. Nicholls.— Account and photograph of a Cockatoo reputed to be 117 years old.

The Emu of King Island. By L. Brazil (translation).

The South Australian Ornithologist.³ Vol. I, Part 4. October, 1914.

Life of Samuel White (continued). By S. A. White.

The Birds of Kallioota. By A. M. Morgan.

Reappearance in South Australia of the Swift Lorikeet. By E. Ashby.

A Long-Lost Bird. By S. A. White — Rediscovery of *Aphelocephala pectoralis*.

Description of Some Interesting Birds from the Northern Territory. By Edwin Ashby.— *Karua leucomela mayi*, and *Dulciornis alisteri mayi*, (p. 27), subsp. nov. from Union Bore, near Pine Creek, Northern Territory.

¹ Edited by Hubert D. Astley for the Avicultural Society. Published by West, Newman & Co., 54 Hatton Garden, London E. C. (Monthly) 15s. per year.

² Edited for the Royal Australasian Ornithologists' Union by J. A. Leach and C. Barrett. Published by Walker May & Co., 25 Mackillop St., Melbourne. (Quarterly). Witherby Co., European Agents.

³ Edited for the South Australian Ornithological Association by F. R. Zietz and others. Published quarterly by W. K. Thomas & Co., Adelaide. 8s. per year.

It would save a great deal of future trouble if the author would designate a definite type specimen stating in whose collection it is to be found with date of capture, etc. The description of new forms, like some other things, if worth doing at all is worth doing well.

Bird Notes.¹ September, 1914.

A Sunbird Aviary. By W. T. Page.

A Journey Across the Sierras of Southern California. By W. S. Baily.—The author continues to identify the birds he sees in his own remarkable way which has already been referred to in these columns and in 'The Condor,' XVI, No. 5. The present article is continued in the October number. In it we find *Carpodacus purpureus* breeding in the verandas of buildings in California, while a "Hermit Thrush" (*Hylocichla ustulatus* [sic]) and a remarkable Bank Swallow "*Cotyle erythrogaster*" will prove valuable accessions to our western avifauna!

Bird Notes. October, 1914.

Parrot Finches. By W. T. Page — Color plates of the various species of *Erythrura*.

Aviculture in the Days of Ancient Rome. By Dr. L. Lovell Keays.

Sir William Ingram's Birds of Paradise at Little Tobago. By Per O. Millsom.—Report of the progress of this interesting experiment in acclimatization.

Wild Life. This beautifully illustrated monthly published at 55 Bank Bldg., Kingsway, London, presents some of the most exquisite pictures of wild life to be found anywhere. The series of photographs of Herons, Kingfishes, etc., in recent issues are of particular interest to ornithologists.

The Austral Avian Record.² Vol. II, No. 5. September 24, 1914.

On the Genus name *Mathewsia*. By Tom Iredale.—Preoccupied by *Mathewsia* Sanley, 1868, and *Mathewsena* proposed as a substitute, type *Ardea rubicunda* Perry.

Additions and Corrections to my List of the Birds of Australia. By G. M. Mathews.

Geopelia shutridgei Grant, shown to be a hybrid. By Tom Carter.

New Genera. By G. M. Mathews.—Fourteen proposed mainly for Australian groups. *Alphagygis* is proposed in place of *Gygis* preoccupied by *Gygis*.

Plumage Changes of *Elseyornis melanops*. By G. M. Mathews.

Ornithologische Monatsschrift.³ Vol. XXXIX, No. 7. July, 1914. (In German).

Sixth Annual Report of the Experimental and Model Station for Bird Protection. By Hans Freiherr von Berlepsch.

¹ Edited for the Foreign Bird Society, by Wesley T. Page. Published by J. H. Heustock, Ashbourne, England. (Monthly) 15s. per year.

² Edited by Gregory M. Mathews. Published (at intervals) by Witherby & Co., 326 High Holborn, London, W. C. 1s. 6d. per part.

³ Edited by Dr. Carl R. Hennicke for the German Society for Bird Protection. Published by Max Kretschmann, Creutz'sche Verlagsbuchhandlung, Magdeburg. (Monthly) 8 Marks per year.

Bird Protection in the Prussian Chamber of Deputies.

Ornithologische Monatsberichte.¹ Vol. 22, No. 9. September, 1914. (In German).

The Thrush; a Composer among Birds. By C. Schmitt and H. Stadler.
On Paradise Birds from Keiser Wilhelm's Land. By H. Keysser.

Ornithological Articles in Other Journals.²

Miller, L. H. Bird Remains from the Pleistocene of San Pedro, California. (Bull. Dept. Geol., Univ. of Cal. Publ., VIII, No. 4.) — Species apparently all recent, *Gavia* and *Diomedea* new to American paleontology.

Martin, E. W. The Birds of the Latin Poets. (Leland Stanford Jr. Univ. Publ., series 13.) — Intended "to present in their own words a tolerably full picture of the Roman attitude toward bird-life as reflected in their greatest poets."

Oberholser, H. C. Four new Birds from Newfoundland. (Proc. Biol. Soc. Wash., XXVII.) — *Dryobates pubescens microleucus* (p. 43); *Bubo virginianus neochorus* (p. 46); *Perisoreus canadensis sanfordi* (p. 49) and *Pinicola enucleator eschatosus* (p. 51).

Mearns, E. A. Diagnosis of a New Subspecies of Gambel's Quail from Colorado. (Proc. Biol. Soc. Wash., XXVII, July 10, 1914.) — *Lophortyx gambellii sanus* (p. 113), Olathe, Colo.

Riley, J. H. On the Remains of an Apparently Reptilian Character in the Cotingidae. (Proc. Biol. Soc. Wash., XXVII, July 10, 1914.) — An apparently closed pore was found on the back of the tarsus of *Carpodectes* and eleven other genera of the Cotingidae, considered to be possibly analogous to the femoral pores of reptiles.

Riley, J. H. An Apparently new *Sporophila* from Ecuador. (Proc. Biol. Soc. Wash., XXVII, Oct. 31, 1914.) — *Sporophila incerta* (p. 213), Guala, Ecuador.

Wetmore, Alex. A New Accipiter from Porto Rico with Notes on the Allied Forms from Cuba and San Domingo. (Proc. Biol. Soc. Wash., XXVII, July 10, 1914.) — *Accipiter striatus venator* (p. 119), Cerro Gordo.

Jackson, H. H. T. The Land Vertebrates of Ridgeway Bog, Wisconsin: their Ecological Succession and Source of Ingression. (Bull. Wisc. Nat.

¹ Edited by Dr. A. Reichenow. Published by R. Friedlander & Son, Berlin, 6. Karlstr 11. (Monthly) 6M. per year.

² Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

The scarcity of articles from the continent of Europe, owing to the war, is noticeable. In this connection it may be mentioned that the records of the Philadelphia Academy library show a decrease of 1000 books and pamphlets received since August 1, 1914, as compared with the same period in 1913.

Hist. Soc., XII, Nos. 1 and 2.)—A careful ecological paper covering birds along with other vertebrates.

Alphonsus, Brother. Comparative Migration of our Birds in Autumn. (Amer. Midland Nat., III.)

Saunders, W. E. The Problem of Bird Encouragement. (Ottawa Naturalist, XXVIII, No. 7. October, 1914.)

Cook, F. C. Migratory and Other Ornithological Notes from Lowestoft (The Zoologist, No. 879, September 15, 1914.)

Aplin, O. V. Notes on the Ornithology of Oxfordshire, 1913. (The Zoologist, No. 881, November 15, 1914.)

Clarke, W. Eagle. The "Blue Fulmar": its Plumage and Distribution. (Scottish Naturalist, No. 34, October, 1914.)

Rintoul, Leonora J. and **Baxter**, Evelyn B. Notes on some Passerine Birds found Migrating in Moul. (Scottish Naturalist, No. 35, November, 1914.) — Much valuable information on the subject is presented.

Rintoul, L. J. and **Baxter**, E. V. Birds Singing while in Migration. (Scottish Naturalist, No. 32, August, 1914.)

Stresemann, E. A Contribution to our Knowledge of the Avifauna of Buru. Zoological Results of the second Freiburger Moluccan Expedition. (Novitates Zoologicae, XXI.)—Annotated list of 67 species, with much preliminary discussion. *Accipiter torquatus buruensis* (p. 381) subsp. nov. and *Toxorhamphus* (p. 394) gen. nov. type *Cinnyris novaeguineae*.

Rothschild, W. and **Hartert**, E. The Birds of the Admiralty Islands, north of German New Guinea. (Novitates Zoologicae XXI.) — The collection here reported upon is the second ever obtained from these islands, and the interior of Manus, the largest island, still remains to be explored. The list contains 46 species of which the following, all from Manus, are described as new: *Phlegoenas beccarii admiralitatis* (p. 287); *Cacomantis blandus* (p. 290); *Tyto manusi* (p. 291); *Collocalia esculenta stresemanni* (p. 293) and *Pachycephala pectoralis goodsoni* (p. 296). Incidentally the name *Accipiter hiogaster rooki* (p. 288), is proposed for the Rook Island form of this hawk.

Gurney, J. H. Are Gannets Destructive Birds? (Irish Naturalist, XXIII, No. 10.) — The verdict is in the negative as it is not considered that the amount of fish they catch has any appreciable effect upon the supply for human consumption. The annual market catch of herring alone in Scotland amounts to about a billion and a half!

Keywood, K. P. List of Birds Observed in the Neighborhood of Croydon [England]. (Proc. & Trans. Croydon Nat. Hist. & Sci. Soc., Feb., 1913-Jan., 1914.)

Montague, P. D. A Report on the Fauna of the Monte Bello Islands. (Proc. Zool. Soc., London, 1914, pt. III.) — A list of 25 species of birds.

Berlepsch, Hans Graf von. Report on the Collection of Bird Skins made by Dr. H. Merton on the Kei Islands. (Abhandl. Senckenb. Naturf. Gesell., XXXIV, hf. 4.) — List of 29 species of which the following from

Greater Kei Island are new. *Halcyon chloris keiensis* (p. 494); *Porphyrio mertonii* (p. 498) and *Cinnyris zenobia marginata* (p. 494). (In German.)

Roth, E. Bird Protection on the German sea-coasts. (Zool. Beobachter LV, No. 7.) (In German.)

Gerhardt, Ulrich. On the Morphology of the Penis in Birds. (Zool. Anzeiger, XLIV.) (In German.)

Knauer, Fr. New Results of Bird-handling Experiments. (Zool. Beobachter LV, No. 7.) (In German.)

Tschusi, Victor Ritter von. History of Ornithology in Stiermark. (Mitth. Naturw. Ver. für Stiermark XLVIII.) (In German.)

Salvadori, T. and Festa, E. The Zoological Expedition of Dr. E. Festa to the Island of Rodi: Birds. (Boll. Mus. Zool. Anat. Comp., Torino, XXVIII, No. 673.) (In Italian.)

Someren, Dr. V. G. L. von. The African Brown-bellied Kingfisher, *Halcyon semicarpuleus*. (Jour. E. African and Uganda Nat. Hist. Soc., IV, No. 8, Aug., 1914.) — With excellent plates.

Dobbs, C. M. Notes on Crested Cranes at Kericho. (Jour. E. Afr. and Uganda, Nat. Hist. Soc., IV, No. 8, Aug. 1914.)

Williams, R. B. Some Notes on Birds in Sarawak. (The Sarawak Museum Journal, II, pt. 1, No. 5.)

North, Alfred J. The Birds of New South Wales. (Brit. Asso. Adv. Sci., 1914 Handbook of N. S. Wales.) — A brief popular résumé of the bird life.

Haswell, W. A. Birds of Australia. (Federal Handbook of Australia, 1914.) — Similar to the last.

Brabourne, Lord and Chubb, Charles. A Key to the Species of the Genus *Crypturus* with Descriptions of Some New Forms. (Ann. Mag. Nat. Hist., XIV, 1914.) — No less than nine new races are here described as well as *Crypturellus* (p. 322), a new genus with *C. tataupa* as type.

Roberts, Austin. Notes on Birds in the Collection of the Transvaal Museum with Descriptions of several New Subspecies. (Ann. Transvaal Mus., IV, August 22, 1914.) — *Lophoceros nasutus maraisi* (p. 170), Rhodesia; *Rhinopomastus cyanomelas intermedius* (p. 171), Koedoes River, Zoutpansberg Dist.; *Anthus daviesi* (p. 172), Matatiele, E. Griqualand; *Anthoscopus caroli hellmayri* (p. 174), Mapagone; *Tarsiger stellatus chirindensis* (p. 175), Chirinda Forest, S. E. Rhodesia; *Centropus pymi* (p. 175), Kaffraria; *Chlorophoneus olivaceus taylori* (p. 178), Indhlovudwalile, E. Transvaal.

Laubmann, A. Scientific Results of the Expedition of Dr. Erich Zugwayer in Balutschistan, 1911. The Birds. (Abhandl. Königl. Bayerischen Akad. der Wissenschaften Math.-physik. Klasse XXVI, 1914.) — A fully annotated list of 89 species with discussion of allied forms, distribution, etc.

Huxley, Julian S. Courtship of the Crested Grebe. (Proc. Zool. Soc. London, No. XXXV, 1914.) This is a remarkably minute and painstaking study of behavior. The grebes in any of their activities are grotesque looking birds, and the curious stereotyped series of actions that constitute their

courtship must be extremely interesting to see. The prominent part that the elaborate ruff and ear tufts play, and the ways in which they may be displayed and contrasted are important to know. As our American grebes no doubt go through the same or similar performances this paper is one with which American ornithologists should familiarize themselves.

Publications Received.—**Bailey**, Florence Merriam. Handbook of Birds of the Western United States. Fourth Edition, revised. Houghton Mifflin Co. 1914. Price \$3.50 net. (Postpaid \$3.69.)

Bryant, Harold C. A Survey of the Breeding Grounds of Ducks in California in 1914. (The Condor, XVI, No. 5, Sept. 15, 1914.)

Chapman, Frank M. Diagnoses of apparently new Colombian Birds. III. (Bull. Amer. Mus. Nat. Hist., XXXIII, Art. XL, pp. 603-637, Nov. 21, 1914.)

Cooke, Wells W. Distribution and Migration of North American Rails and their Allies. (Bull. U. S. Dept. Agriculture, No. 128, Sept. 25, 1914.)

Curtis, Maynie R. Factors Influencing the Size, Shape and Physical Constitution of the Egg of the Domestic Fowl. (Ann. Rept. Maine Agr. Exper. Sta. for 1914, pp. 105-136.)

Dearborn, Ned. Bird Houses and How to Build Them. (U. S. Dept. of Agr., Farmers' Bulletin 609. Sept. 11, 1914.)

Gurney, J. H. (1) The Gannetry at "The Stack," Orkney Islands. (The Ibis, Oct. 1914, pp. 631-634). (2) Are Gannets Destructive Birds? (Irish Naturalist, Oct. 1914.)

Ingersoll, Ernest. Alaskan Bird Life as Depicted by Many Writers. Nat. Asso. Aud. Soc. New York, 1914.

Kennard, Frederic H. A List of Trees, Shrubs, Vines, and Herbaceous Plants, Native to New England, Bearing Fruit or Seeds Attractive to Birds. (Bird-Lore, XIV, No. 4, July-Aug., 1912.)

McIlhenny, Edward A. The Wild Turkey and its Hunting. Doubleday, Page & Co. 1914. Price, \$2.50 net.

Mathews, Gregory M. The Birds of Australia. Vol. IV, Part 1. 4°, pp. 1-80, pll. 200-209. London, Witherby & Co. Oct. 6, 1914.

Palmer, T. S., Bancroft, W. F., and Earnshaw, Frank L. Game Laws for 1914. (U. S. Dept. of Agriculture, Farmers' Bulletin 628, Oct. 20, 1914.)

Pearl, Raymond. (1) Studies on the Physiology of Reproduction in the Domestic Fowl. VII, Data Regarding the Brooding Instinct in its Relation to Egg Production. (Jour. Anim. Behavior, IV, No. 4, pp. 266-288, July-Aug., 1914.) (2) Improving Egg Production by Breeding. (Ann. Rept. Maine Agr. Exper. Sta. for 1914, pp. 217-236. (3) The Measurement of Changes in the Rate of Fecundity of the Individual Fowl. (Science, XL, No. 1028, pp. 383-384, Sept. 11, 1914.)

Pearl, Raymond and Surface, Frank M. A Biometrical Study of Egg Production in the Domestic Fowl. III. Variation and Correlation in the Physical Characters of the Egg. (U. S. Dept. of Agriculture, Bureau of Animal Industry, Bull. 110, pt. III, July 31, 1914.)

Reichenow, Anton. Die Vögel. Handbuch der Systematischen Ornithologie. Zwei Bände. II. Band. Stuttgart, 1914. Verlag von Ferdinand Eube. 8vo, pp. 1-628. Price, M. 18.40.

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CORRESPONDENCE.

Obituary Notices.

EDITOR OF 'THE AUK':

The undersigned begs to call attention to the following facts disclosed by an examination of the last list of Deceased Members of the A. O. U.

(1). That 3 Corresponding Fellows (Altum, Hoast and Philippi) and 1 Member (Judd) have never had any obituary notices in 'The Auk.'

(2). That nearly one half (55) of the deceased Associates have never had obituary notices.

(3) That during the last two years eight Associates have died without mention except in the list of Deceased Members. These Associates are Beers, Butler, Mrs. Davis, Hales, Hill, Miss Howe, Marsden and Welles.

(4). That every obituary notice should give at least the full name of the person and the date and place of birth and death. Fully 50 percent of the obituaries in 'The Auk' fail to mention one or more of these essential facts.

Respectfully,

T. S. PALMER.

1939 Biltmore St., N. W.

Washington, D. C.

November 16, 1914.

[While entirely in accord with Dr. Palmer's suggestion, the editor begs to call attention to the fact that incomplete notices of deceased members are often sent in for publication only a short time before the number of

'The Auk' goes to press. Promptness of publication is important and there is no time for the necessary correspondence to complete the records. In the case of Associates the editor seldom learns of deaths until the list of members for the next year is submitted for publication.

The best plan that suggests itself for keeping an accurate record of deceased members, and ensuring proper obituary notices, would be to appoint some competent member of the Union, such as Dr. Palmer, as a permanent committee on History and Biography, a suggestion which is hereby respectfully offered to the president and council. Ed.]

Time of Incubation.

EDITOR OF 'THE AUK':

The writer is gathering data on the length of the incubation in various bird species. He would like to ask if any of the readers of 'The Auk' could help him in this quest. Knowledge of the exact time would be preferred but an approximate might help. He has already collected a considerable mass of information on this subject, but wishes more, especially concerning the lower and lowest forms of bird life. Any expense in this matter would be gladly defrayed by the writer.

Yours cordially,

W. H. BERGTOLD.

1159 Race St., Denver, Colo.,
November 26, 1914.

Proposed Revision of the By-Laws of the American Ornithologists' Union.

EDITOR OF 'THE AUK':

I wish to address all working ornithologists and oölogists in the United States and Canada,—through the columns of 'The Auk,' 'Condor,' and 'Wilson Bulletin.' For a number of years, there have been many of the working ornithologists and oölogists who have not been satisfied with the present by-laws of the American Ornithologists' Union. This dissatisfaction has been shared alike by "Fellows," "Members" and "Associates" of the Union. We have seen in a mild form from time to time this dissatisfaction expressed in the columns of 'The Auk,' only to be side-tracked and dropped with but small notice and courtesy.

I have just received the annual circular letter from the A. O. U., stating my dues for the ensuing year are now due, and asking for new members, etc., etc. Each year as I look over this communication I ask myself, "Shall I continue in the A. O. U., and what can I offer a new member as an inducement to have him join the "Union?" Carefully looking through the pages of the by-laws I can find no inducement to offer him, nor do I see any

inducement offered me to continue in the Association after this year, should the by-laws not be changed. I have no quarrel with any officer, or class of member of the A. O. U., my quarrel is with the by-laws. We all know that the A. O. U. was only a continuation of the "Nuttall Club," and when re-organized and incorporated in 1888, nearly all active members at that time could be, and were, embraced in the class of "Fellows" and "Members." Active members since that time have increased, so much so that now many of the most active workers are in the Associate class. The by-laws have remained the same, not keeping pace with the changed conditions. How many of the different class of members of the A. O. U. have ever seen a copy of the by-laws? The copy that I now have before me, I secured in March, 1914, through the courtesy of the Treasurer. In reply to my query as to who was entitled to a copy of the by-laws, the Secretary informed me on 10/28/1914, "That every member and associate of the A. O. U. is entitled to a copy of the by-laws, but it is not customary to send a copy unless requested to do so." I believe if every new member could see the by-laws before joining, that he would think them so narrow, and the inducements offered therein so small, that he would refrain from joining the Union. I trust every class of members will at once send to the Secretary, and secure a copy of the by-laws, and see for themselves if the following assertions are correct or not.

About eight per cent of the membership are "Members," paying four dollars yearly dues. They have no vote or voice in the business matters of the Union.

About ninety per cent are "Associate" members, paying three dollars yearly dues. They have no vote or voice in the business affairs of the Union.

The business meetings are of the "Star Chamber" kind, and are not open to the main supporters of the Association.

There is no given method for the advancement of members from one grade to that of a higher grade, nor is there any given standard for a member to measure up to; before he can be advanced to a higher grade. This is one of the weakest points in the by-laws. Judging from the membership list in the April, 1914 'Auk,' we gather the following has nothing to do with one's chances for advancement.

Length of time as a member.

Field work in any of the active lines.

Attending annual meetings of the A. O. U.

Published articles in 'The Auk.'

Amassing a collection of scientific specimens, and a library on ornithology, either through purchase or by personal work.

What qualifications then must a person have, to attain a higher grade in the Union? Are the majority of the "Fellows" in a position to know just who is doing active work, or eligible to advancement? What member wishes to make out his own application for nomination to a higher class, and have it signed by three "Fellows" as required by Section 4, Article 4,

of the by-laws? What chance is there for a member to become a "Fellow" except through dead men's shoes, and who likes to wait for such advancement? A "Fellow" can only be retired by his own desire, Article 1, Section 3. No one can blame any of the "Fellows" for desiring to remain in that class, even though some may take no active part in ornithology and its branches today. The present grades in the membership of the Union, are unsatisfactory and undemocratic. Acting in conjunction with other members of the A. O. U., I forwarded proposed changes in the A. O. U. by-laws, to the last meeting of the Union. I had the support and endorsement of two "Fellows," as required by Article 8. I have not been informed in an official way by any officer of the Union, what action, if any, was taken, nor have we seen any mention of the subject in the columns of the official organ, 'The Auk.'

The A. O. U. was supposed to be an organization for the "Advancement of its members in ornithological science." A large percentage have been taken into the Union merely for the payment of their \$3.00 dues, and not with any idea of strengthening the Club scientifically. There are other societies where this class of members can do more good than in the A. O. U. Some of the most active workers today in the various ornithological branches are not, and will not, become members of the A. O. U. on account of the class distinction, and star chamber methods of conducting the business of the Union. Let us have the needed changes in the by-laws, and let all class of members express their views and desires through the columns of the several ornithological journals. Let us hear from the "Fellows" in a broad-minded way, just how much they have the interests of the A. O. U. at heart. Above all, let us have a democratic organization, equal rights to all, special privileges to none. If, after a fair fight, we cannot get our desired changes, let those who are dissatisfied with the present by-laws and way of management, withdraw from the A. O. U., and give their support to some organization who will offer us the coöperation of their organization.

H. H. BAILEY.

Newport News, Virginia,
November 25th, 1914.

[As Mr. Bailey asks for comment upon his letter and as some of his statements are evidently the result of misinformation or misunderstanding we take this opportunity to state our views on the matter.

As we understand him he presents three claims. 1st, That the A. O. U. offers no inducement to new members. 2nd, That there is no definite standard for the advancement of members and that the results of the elections to advanced classes of membership as presented in the current list of members are unsatisfactory. 3rd, That all classes should be abolished resulting in one grade of membership for all.

Taking up these points seriatim:

1st. The A. O. U. at its annual meetings offers opportunities for orni-

thologists of all classes to meet together on perfect equality to participate in a three days scientific session and to enjoy the hospitality which is generously offered by institutions and local members. It maintains a high class ornithological journal in which papers of merit by any Associate, Member or Fellow may be published and which presents a résumé of the progress of ornithology not only in America but throughout the world. And through its committees, publications and meetings it brings ornithologists in all parts of the country in touch with one another and opens the way for the beginner or the isolated student to acquire, through correspondence with specialists and recognized authorities, the knowledge and advice that he would not otherwise be able to obtain.

We cannot agree with Mr. Bailey that there is no inducement to join the A. O. U. We think on the contrary that the A. O. U. has been responsible for the wonderful development of ornithology in America and that every member who has made use of the opportunities which it offers to him has profited largely thereby.

2nd. Election to any limited society or membership is bound to be unsatisfactory to some. There are always those who think that they or their friends have been unjustly rejected and that those who have been chosen did not merit the honor. Mr. Bailey's list of those eligible for advancement would no doubt differ widely from ours and neither of our lists would suit the views of a third member of the Union. This is inevitable and it should be obvious to all that a vote in this connection as well as for any elective office or position, is based on personal opinion, which varies so widely that in many societies, and the A. O. U. is no exception, it is sometimes impossible to get the necessary majority for any candidate so that a vacancy in advanced membership cannot, for the moment, be filled. If it were possible to establish a definite standard for the different classes of membership no election would be necessary, but the establishment of a definite standard is quite impossible. The points to be considered in any candidate are his eminence in some branch of ornithological science and his service to ornithology, but the relative merits of several candidates can only be decided by a vote, and the majority vote of the Fellows called for in the By-Laws, seems a reasonable requirement for election. We cannot question, as does Mr. Bailey, the qualifications of the Fellows to make a choice, surely they are as well fitted as either the Members or Associates.

We can hardly take Mr. Bailey seriously when he says that "Length of time as a member"; "Field Work"; "Attendance at Meetings"; "Published articles"; "The Amassing of a collection or library," had nothing to do with the advancement of the 40 ornithologists who have been elected Fellows since the A. O. U. was founded or the 75 who have been elected to Membership. Surely he does not mean what he says! At the same time it may be noted that a man might be a regular attendant at meetings, might gather together hundreds of specimens or books and might publish many papers of a certain quality, and yet not reach the

stage of intellectual development, nor display the scientific knowledge, that would entitle him to advancement.

3rd. As to abolishing the classes and having but one grade of membership much may be said. The establishment of an advanced class of Fellows, membership in which is based upon scientific eminence, is an almost universal custom in scientific societies and the value placed upon such distinction seems proof enough of its desirability. The enlargement of such a class immediately detracts from its significance. The 'Fellows' of the A. O. U. represent the fifty leading ornithologists of America; standards may become higher and higher but at any given time the Fellows may always be so characterized.

The class of Members was established some years ago, to meet just such criticism as is contained in part in Mr. Bailey's letter, and represents another grade of distinction, a stepping stone as it were to Fellowship. This class was not originally provided for and the By-Laws have therefore not remained stationary as Mr. Bailey states.

The question of entrusting the business of the Union entirely to the Fellows is a matter quite apart from the establishment of "advanced classes," and it is here and here only, we think, that Mr. Bailey's views may find support.

This matter of enlarging the business body has as a matter of fact been under consideration by the A. O. U. Council for some time and has the general approval of the members. As the Union moreover is not a secret society, and has no desire or intention of concealing its actions, it may we think, be stated in this connection that there is every probability of the adoption at the next meeting of a suggested plan whereby the Members will be allowed to share with the Fellows the business management of the society, thus bringing about the desired result.

The entrusting of the business affairs to a small body of members was never intended to create a "star chamber" as Mr. Bailey infers but to relieve the general membership of a burden and to permit of the entire open session each year being devoted to ornithological matters.

Whatever changes may be made in the way of enlarging the business body of the Union we feel sure that the opening of business discussion to the entire membership would be strongly opposed by Associates and Members at large. The A. O. U. is not a political body and the details of its business are not of very serious moment to the membership. Those who attend meetings, come, in large part, from considerable distances; their time is limited and the desire to enjoy the scientific and social features of the gatherings, not to waste valuable time in prolonged discussions of minor matters which would inevitably result from open business meetings. The present plan of a preliminary business session before a relatively small body leaves three whole days for the discussion of ornithology, for which the A. O. U. was organized.

In regard to Mr. Bailey's proposed changes in the By-Laws, his statement is a little misleading, and it is only fair to say that his communication was sent to the Editor of 'The Auk' for presentation at the last meeting of

the Union. It was however mailed so late that it was not received until after the meeting had adjourned. Mr. Bailey was of course, so informed; but has received no "official" report of action for the simple reason that his communication cannot be even presented to the Union for consideration, until the 1915 meeting. It is needless to say that any properly prepared proposal to amend the By-Laws, received prior to any meeting of the Union, will be given, as it always has been given, careful and courteous consideration.

Mr. Bailey says of the Associates "a large percentage have been taken into the Union merely for the payment of their \$3. dues and not with any idea of strengthening the Club scientifically." He would we think have a different conception of the Associate membership if he glanced at the early history of the Union. The society was of course started with but one grade and could readily have limited its membership strictly to ornithologists of high scientific attainments as has been done by many similar organizations, leaving the rank and file of the subscribers to its publications entirely outside of the society. It was thought better however to take in these subscribers as "Associates" without any additional fee, and to open to them all the social and scientific privileges of membership. The Union has thus helped to develop many an ornithologist who would not otherwise have taken up the study seriously, and we have reason to think that the vast majority of Associates are in entire agreement with the plan.

In conclusion we must take exception to Mr. Bailey's statement that dissatisfaction with the A. O. U. By-Laws when expressed in 'The Auk' has been "sidetracked" and dropped with but small notice and courtesy. We think he made this statement without due consideration since the only expression of the kind that we have found (*Auk*, 1908, p. 494) was considered and answered with the greatest courtesy by the Editors.—WITMER STONE.]

NOTES AND NEWS.

DR. THEODORE NICHOLAS GILL, a retired fellow of the American Ornithologists' Union, died in Washington, D. C., on September 25, 1914. Dr. Gill was born in New York City on March 21, 1837, and after completing his education came to Washington in 1860 to fill a position in the Columbian (now George Washington) University, with which institution he was connected for fifty years as professor, successively, of physics, natural history, and zoölogy. He was also assistant librarian of the Congressional Library, 1867 to 1875, and one of the past presidents of the American Association for the Advancement of Science.

It was however, in connection with the Smithsonian Institution that Dr. Gill is best known and here he conducted the studies and investigations that made his name familiar in scientific circles throughout the world:

Ichthyology was his specialty and it was in that field that he won his greatest renown. His publications were by no means limited to the fishes however. His learning was broad, his knowledge of literature enormous, and he was in every sense a philosophical naturalist, one of the last of a group, the like of which, in these days of specialization, we shall probably not see again.

Dr. Gill was elected a Fellow of the A. O. U. at the first meeting in 1883, and was a prominent figure at all the meetings held in Washington. He was a member of the Committee on revision of the A.O.U. Code of Nomenclature and was ever ready with helpful suggestions in matters of nomenclature and taxonomy with which the Union has had to deal. Most of his ornithological publications dealt with matters of taxonomy in connection with the classification of the vertebrates in general, although during his editorship of 'The Osprey' (1899-1902) he wrote upon a great variety of topics.

To how many of us does Dr. Gill's name bring up memories of the old Smithsonian building, where he had a room, and in the library of which he could usually be found engaged in some literary research, but never too busy to discuss with his friends the problems with which they were struggling, or to turn to the young naturalist with helpful words of advice or reminiscences of the past.

By all visitors to the scientific centers of the national capital Dr. Gill's cheerful greeting and sympathetic interest will be sadly missed, and in still greater degree by his associates in Washington.

A biographer will be appointed by the president of the A. O. U. to prepare an adequate sketch of Dr. Gill's life and work which will later appear in 'The Auk.'

THE following communication from the Chairman of the local Committee of Arrangements for the San Francisco Meeting of the A. O. U., May 18-20, 1915, will be read with interest by all members of the Union. This however will not make the meeting a success. A large number of the readers must make up their minds to be present at the meeting, to enjoy the pleasures and hospitality which Mr. Mailliard and his fellow members of the Cooper Club offer, and to make them feel that their efforts have not been in vain. Many members in the east can make the trip by arranging their plans now, and even though it puts them to some little inconvenience it is their duty to California and the A. O. U. to make such sacrifice and to help to make this the most notable meeting that the Union has ever held.

Mr. Mailliard's announcement follows:

THE 1915 MEETING OF THE AMERICAN ORNITHOLOGISTS' UNION.

On February 20th, 1915, the Panama-Pacific International Exposition will be formally opened. The stage is already set, and only the finishing touches remain to be applied. Already the wonderful color scheme is a thing of beauty and a joy to the sight-seers who throng the grounds even

before a single exhibit is in place. The great trouble in the countries across the Atlantic may lessen the exhibits and the number of visitors from that part of the world, but this will be more than made up by the even more interesting exhibits of the Oriental nations and the great number of Americans who have at this late day determined to "see America first!"

Yet it is not the exposition that will be the greatest attraction to the ornithologist. There have been a number of expositions in the United States, and most of you have seen more or less of them. So it is an old story. But there will be opportunities to visit this State under conditions never before brought about, and which will not prevail again for many years to come.

We have been called a hospitable people here in California. I do not know. Perhaps we are. We were brought up in the customs of a new country, where habitations were few and far between. If you reached a house at meal time, or at night, you tied your horse and entered to find a welcome. You were offered what there was, much or little as might be, and you accepted in the spirit in which it was offered. Perhaps we have not gotten over this. In 1915 we are going to be on our mettle to be hospitable, and we are going to give a welcome to our neighbors and friends that will linger in their memories as long as they may live — and may our friends live long!

No, it is not the Exposition that we wish to call especially to your attention, it is *California*. You may have seen many expositions but you have not seen many Californias. Most of you have not seen ours. From the summit of Tamalpais we want you to see the sun set in the great Pacific, and from this point of vantage to watch the lights of San Francisco glow and glimmer as the stars appear, and to see the same sun rise over the Sierras, if you have the energy to be up so early.

We want you to see the Farallon Islands, only a couple of hours run from the Exposition grounds, with their wonderful seabird life, the thousands of California Murres on their nests, the Cormorants busy in their rookeries, Tufted Puffins peeping from their holes, not to mention Gulls, Cassin's Auklets, Rock Wrens, etc.

We want you to visit the Los Banos breeding grounds, so well represented in the American Museum of Natural History in New York City, where you can see many varieties of ducks, herons and shore birds building their nests and raising their young on the swamp lands and among the tules. We want to show you our Humid Coast Belt, with its characteristic forms of bird life, and only a few miles inland our desert and semi-desert areas where water brings about a revolution, and where Nature asserts her will, insisting upon desert forms predominating but a short distance from where are to be found those darker forms which moisture with lower temperatures seem to create.

We want you to see Lake Tahoe, with its wonderful scenery, surrounded by snowy peaks where breed the Gray-crowned Leucosticte and the California Pine Grosbeak, and for those of you who like it the magnificent

fishing the lakes and streams of the Sierras afford. We want you to see the beauty and grandeur of our unrivalled Yosemite, and to walk with you beneath our great redwoods which were old when our forefathers landed on the eastern coast.

We have more to show you than most of you imagine, and under conditions never before existing as far as rates of travel, good fellowship, a wish to welcome all the world and the desire to please our guests are concerned, to say nothing of the fact that there will be gathered here in various conventions of numerous bodies, many of the world's greatest minds. Traveling rates will be low, hotel keepers have agreed not to raise their prices above the everyday mark, accommodations will be ample, good, and at rates to meet one's purse, while the desire to make the Exposition a success, rather than to make large profits out of those who come, seems to prevail.

The meeting will be held May 18th to 20th, this being chosen as being the best average date at which to see our bird life in the nesting season, which really commences in February and lasts until August! Let us all do our best to make this meeting a grand success, to form new friendships, and to make of it a pleasant memory that will never leave our hearts. Each who comes can do his or her share to make the A. O. U. meeting in California something to look back upon with pleasure, and to talk of around the fire on snowy winter nights.

Come all who can, yet bear in mind, one and all, that while we have warm weather in the interior of California, San Francisco is a *cool spot* where light overcoats and wraps are always in order and may be needed at any moment!

Details as to rates of travel, hotel expenses, interesting side trips, etc., will be furnished later.

JOSEPH MAILLIARD,
Chairman Committee on Arrangements.
San Francisco, Cal.

AFTER preparing the note in the last issue of 'The Auk,' on beneficial effect of the new tariff in stopping the importation of Rhea plumage and thereby putting an end to a trade that threatened the extinction of this splendid bird, we were astonished to learn that by a decision of the Treasury Department, the Rhea was excepted from the operation of the law. The official notice states: "It appears from the best information obtainable by the department that the so-called Rhea is, in fact, an ostrich, and the feathers of such birds may, therefore, be admitted without requiring proof that the plumage was taken from domestic birds." With the wealth of technical knowledge so easily obtainable from the scientific departments of the government it is rather remarkable that the Treasury Department should have taken upon itself the settlement of such an important ornithological question.

However open to criticism its action in this respect may be, its willingness to promptly admit an error is exceedingly praiseworthy, and we are grati-

fied to learn from a subsequent order that: "Further investigation by the department has shown that the rhea is not properly classed as an ostrich put is in fact a wild bird, the plumage of which should be prohibited importation."

FULL NAMES OF AUTHORS IN 'THE AUK.'—In preparing the general Index of 'The Auk' published in 1907 the committee in charge of the work endeavored to give names of authors in full but the requisite information proved impossible to obtain in many cases and consequently about 170 names appeared in more or less incomplete form. The committee which is indexing the volumes from 1901 to 1910 inclusive, in following the plan of the former Index, has made special efforts to secure this information and has succeeded in obtaining the full names of nearly all the authors mentioned in the recent volumes and has also secured about 130 of those which were incomplete in the former Index.

Some 46 names are still needed—about nine for the recent volumes and about 37 for the earlier ones—as shown by the following list. In order to facilitate the search for the desired data each author's name is followed by the name of the State from which the note was written or that of the author's last known address and a reference to the volume and page of 'The Auk' in which the article appeared.

Allen, Charles N.	'81, 145	Lane, Ambrose A. (Engl.)	'97, 417
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As it is desirable to have the full names of all contributors to 'The Auk,' readers who can furnish any of the missing names or can suggest how they may be obtained are requested to notify the editor or to communicate with the undersigned.

T. S. PALMER.

1939 Biltmore St., Washington, D. C.

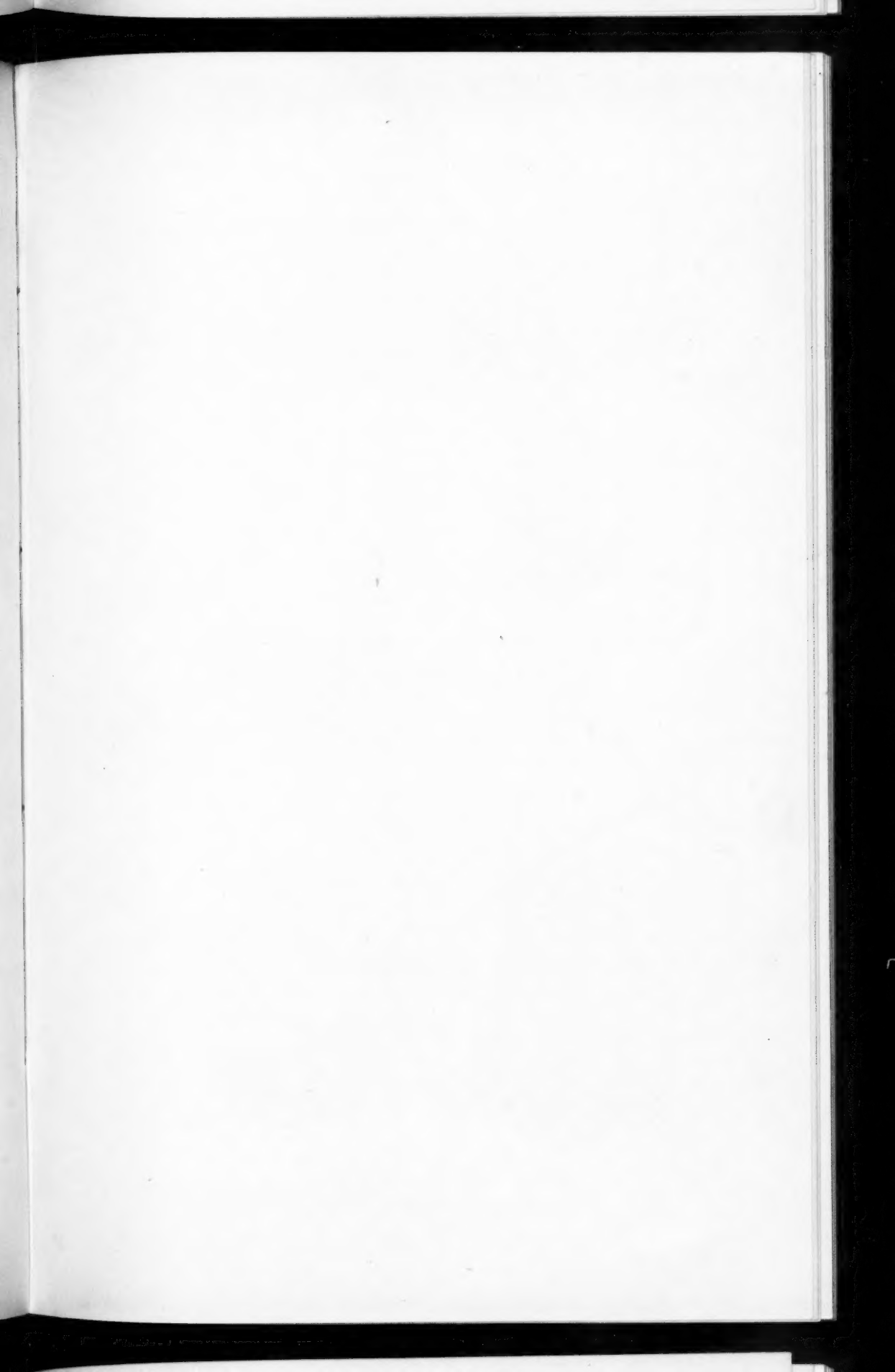
Mr. Louis Agassiz Fuertes, at the request of the Council of the A. O. U., and with the advice of a committee appointed by the President, kindly prepared a new cover design for 'The Auk' which appeared for the first time on the number for January, 1913. As to the accuracy of drawings of extinct species the poet has written:

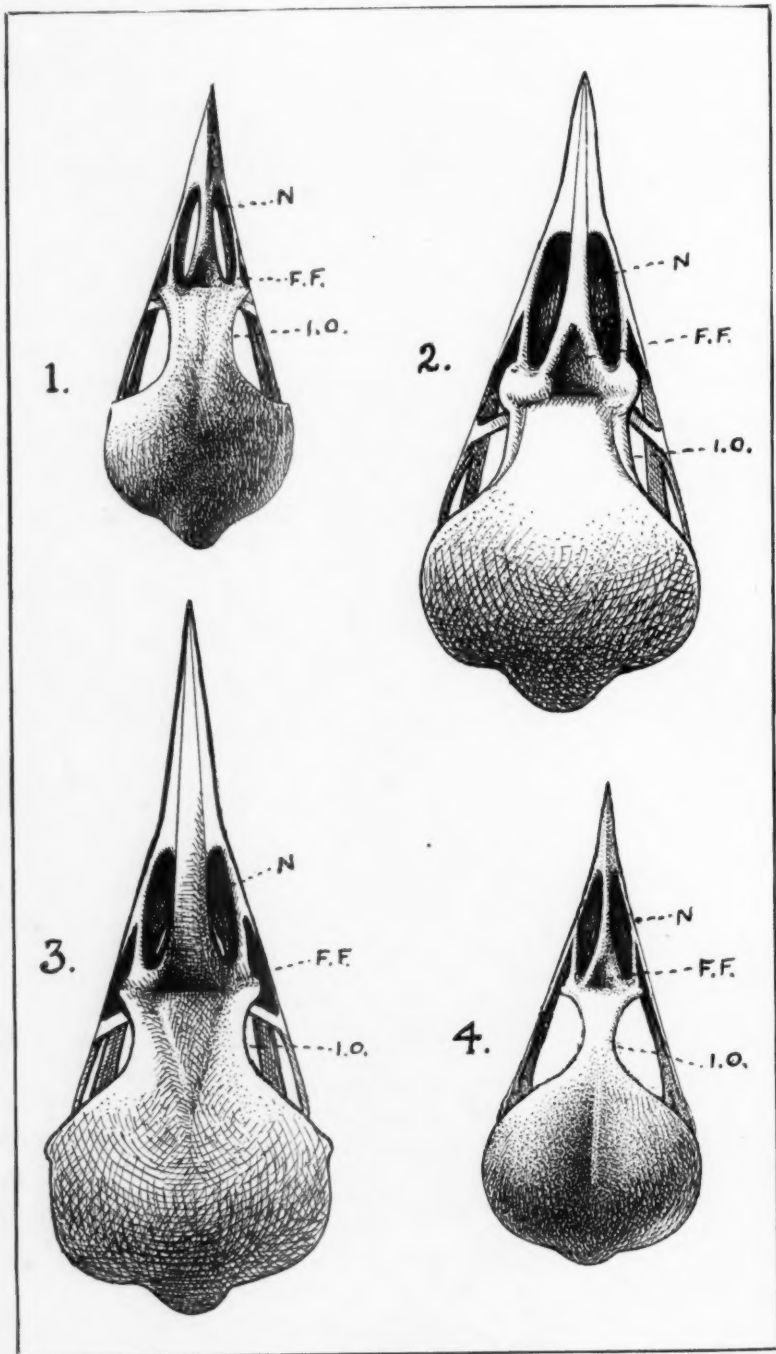
"This we have for comfort sweet
Should doctors disagree,
Nobody lives who knew the beast,
And there are no more to see.
So if they do not like its looks,
What can they do about it?
Our guess is just as good as their's
So if they scoff, we'll scout it!"

Notwithstanding the logic of this statement, the Council at the last meeting appointed a new committee to confer with Mr. Fuertes in regard to preparing another design, which should follow more closely the general style of the original vignette. Mr. Fuertes has generously complied with the request and the result appears on the cover of the present number. Which drawing is the better portrait of the Great Auk as it appeared in life, we are, like the poet, unable to say; but the present one is both artistic, and accurate in detail, while it conforms more nearly to the conventional idea of the famous bird.

A NEW edition of the Naturalists' Directory has just been published by S. E. Cassino, Salem, Mass. This directory is invaluable to naturalists since it is the means of bringing together students and collectors in all parts of the world through correspondence. The directory contains an alphabetical list of English speaking professional and amateur naturalists in all parts of the world, also a list of scientific societies and periodicals. The price of the Directory is \$2.50 in Cloth Binding and \$2.00 in Paper Binding; sent postpaid. As only a limited edition has been printed it is advisable for any one wishing a copy to order at once.

THERE will be an exhibit of pictures of our common birds at the American Museum of Natural History, New York City, January 15th to 29th inclusive followed by a sale exhibition at the Katz Gallery, 103 West 74th St. These pictures show the Robin, Blue Jay, Oriole, Wood Thrush and other birds we see about our homes and that we all know and have come to love. The birds are pictured life size, singly and in family groups, sometimes nesting or courting, often surrounded by apple bloom, golden rod, or wood lilies, flowers they might be found among, or the bright leaves of April or October, or the snow of winter. Seventy-five or more water colors large and small will be shown, all exhibited for the first time. The purpose of the pictures is to present the beauty of just our commonest home and dooryard birds.





SKULLS OF DENDROCOLAPTIDÆ.